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IT has been suggested to us that many persons might hesitate to act on the suggestion we offered a fortnight ago, and might refrain from expressing their opinion as to the ten buildings in this country that can claim the highest architectural rank, because we requested them to sign their votes. We beg to assure them that our only object in asking for a signature is to prevent a breach in that most valuable editorial rule, which requires a signature as an "evidence of good faith." Another feeling may act to prevent the full expression of opinion we desire to secure, and that is the feeling that though most architects have to move about through considerable areas of the country in the prosecution of their business, and so have become familiar with many buildings, they can never feel sure that those they have not seen may not be better than the ones they have seen. This is of little importance, for we hope to receive a sufficient number of replies to be able to make a sub-classification of the votes by cities, or at least by contiguous sections. We must ask our reader's indulgence if in seeking to draw out a full vote, we adopt in this issue a somewhat vulgar means of attracting their attention by typographical trickery.

WE have received a copy of the text of the revised Building Act now under consideration in the Massachusetts Legislature, and although we dislike, as a rule, to comment upon matters pending before the proper authority, we cannot refrain from expressing our sincere hope that the Act may pass without modification, and our opinion that in this case the people of Massachusetts will have reason to congratulate themselves on the possession of a building code superior to any in force in the world. This seems a good deal to say, when one considers the elaborate and excellent provisions of the Parisian and Viennese codes; but we think that most experts will agree with us, that the proposed Massachusetts law, while perfectly adapted to our usual methods of building with light wooden frames, evinces a skill and a familiarity with modern methods, in providing for the protection against fire by the simplest and cheapest means, of these as well as other forms of construction, which no other building code can show. This is high praise, but it is deserved, and every citizen of Massachusetts who is interested in questions of public safety or health, as affected by the proper construction of buildings, should avail himself of all suitable opportunities to promote the passage of the Act.

THE Annual Report of the Boston Manufacturers' Mutual Fire Insurance Company, with that of the Spinners' Mutual Company, contains, as usual, much interesting and valuable information. Apart from the details of the causes of fires in the insured mills, and the methods by which they were extinguished, which form the portion more particularly interesting to architects and builders, there is something well worth notice in the statement of the financial condition of the companies. Taking the Boston Company, which is much the larger of the two, as an example, we find that it now holds risks on more than seventy-three million dollars' worth of property. On this it collects premiums at the average rate of eighty cents for each hundred dollars insured, and at the end of the year returns in the form of dividends the surplus left over after paying for the losses out of the premiums received. Although the mills insured by the Company are regarded as hazardous risks, so admirable is the system under which, by the suggestions of the officers of the Company, they are protected against fire, that for the last seven years the average sum paid back to members has been very nearly three-quarters of the premiums received; making the actual cost of insurance about twenty cents on each hundred dollars' worth of property covered; or, to put the same facts in a different way, if the Mutual Company had been managed like a stock company, and had kept all the premiums paid, at the low rate of eight-tenths of one per cent, instead of returning the greater part of them in dividends, the accumulation of the surplus of premiums over losses in the last seven years would now be sufficient, if invested as capital at five per cent interest, to keep the same property perpetually insured, at the present average rate of losses, without the payment of any more premiums.

THIS remarkable result, which shows that, with adequate precautions, cotton and woolen mills, filled with inflammable material, with chemicals liable to spontaneous combustion, and with machinery in rapid motion, can be insured at about the same rate as brick dwelling-houses in city streets, is by no means the consequence of unusual good fortune. On the contrary, the record of the past year shows that forty-eight fires have occurred in the insured mills, and the smallness of the aggregate loss has evidently been due to the precautions insisted upon by the Company, which have reduced the damage in the vast majority of cases to amounts less than a thous nd dollars, and in many to such trifling sums as eight or ten dollars, the larger losses being very exceptional. Risks are now taken to the amount of two hundred thousand dollars on a single building, and within the present year two fires have already occurred, each of which involved a lo-s of more than one hundred thousand dollars; but the persevering application of well-understood rules, has reduced the average rate of loss to a mere trifle. Among the most curious fires mentioned was one occasioned by a rocket, which descended into the dust flue from a picker, and, lighting the dust, set fire to the contents of the picker-room, fortunately without doing much damage. Another which caused great destruction was transmitted with extraordinary celerity from some oily stock burning in one building to the adjoining one, through a covered bridge, setting the second building on fire from end to end, and totally destroying it, although it was completely furnished with automatic sprinklers. It is supposed in this case that the steam from a pipe which broke at that moment served to convey the gas from the burning stock into the second mill, perhaps mixing with it to form a very explosive compound.

THE New York Fire Commissioners had an opportunity the other day of testing practically the effect of bringing electric-light wires in contact with telephone wires, which will probably serve to quicken their apprehension of the dangers to be anticipated from such occurrences in a manner very advantageous to the people whom they are appointed to guard. According to the New York *Evening Post*, the superintendent of the fire-alarm telegraph was in the office of the President of the Fire Commissioners when the telephone bell rang. He went to the instrument and applied the receiver to his ear, but instantly dropped it with a cry, and sank into a chair with his hand to his head, while a puff of smoke issued from the telephone. Almost at the same instant a cry of fire was heard on the stairs, and the President of the Commissioners ran to sound a signal which called the nearest engine to the spot. A moment later the firemen entered, with axes and hose, and, making their way to the telegraph-office in the upper story, found the furniture and apparatus in confusion, but the fire, for which they had been called, already out. It seems that the high wind which prevailed during the day had blown some electric-light wire upon the telegraph lines, and the effect of the strong current was immediately seen in the puff of smoke which issued simultaneously from stands of wires in different parts of the room, from the burning off of the insulating coverings of the

wires affected. A few minutes after, however, a dense smoke was seen rising from behind one of the large wooden stands, and on pulling away the front of the woodwork, flames burst out, which reached nearly to the ceiling. This caused a panic in the room and the cry of fire was raised. Fortunately, pails of water and wet cloths sufficed to extinguish the conflagration, and the principal damage done consisted in the destruction of three of the fire-alarm circuits, and the consequent isolation of the districts which they served from the protective system. The Superintendent recovered gradually from his shock, and, beyond a severe headache and hands badly burned, suffered no material injury.

THE Wakefield Home Fire Protective Association, of which we made some mention in our last issue, has begun a series of inexpensive but interesting experiments with different appliances for controlling fires. The first experiment, which took place some weeks ago, was intended to determine the rate of combustion of different materials, such as "excelsior," or thin wood shavings, straw, cord wood, leaves, and other substances of the same sort. Among these materials it was found that excelsior, which is practically the same thing as the slivers which cover the surface of laths and rough timber, and line the hidden spaces of frame houses with an inflammable fur, was perhaps the most combustible. Although, bulk for bulk, it burns no more rapidly than straw, its combustion is much fiercer and the fire more intense. Leaves, as might be expected, are not very inflammable, and burn rather slowly, and the combustion of cord-wood varies in rapidity in a manner pretty well known. The next experiment of which we have noticed the report was a trial intended to test the common theory that a fire of kerosene or petroleum cannot be extinguished with water. This, we may say, is a comparatively recent notion, and is perhaps a reaction from the earlier one, that water would put out all fires whatsoever, on the faith of which a certain Philadelphia fire engineer turned a hose into an underground tank of petroleum, that had taken fire at the manhole, and kept the stream running into it until the fire went out, which happened when all the oil in the tank had been replaced by water. However that may be, experience has shown that water is a poor weapon for defence against burning oil, and the Wakefield experiments were made to ascertain just how much, if any, effect water would have under such circumstances. For this purpose a barrel of shavings was prepared, and two members of the Association stationed near, one armed with a hand-pump and a pail of water, and the other with a similar pump and a pail of kerosene oil. The shavings were then lighted, and water and oil thrown simultaneously on the fire. At every trial the double stream, of equal parts of water and oil, extinguished the fire in less than half a minute. To those who have seen the terrible combustion produced by throwing a jet of petroleum alone upon a fire, this result will seem surprising, but so confident are the members of the Association of the effect of applying liquids promptly, that further experiments are to be made, it is said, with oil alone, or with a very small portion of water. As a corollary to these experiments, we will suggest that others be tried, to show the effect of ammonia in putting out petroleum fires, as well as those of other materials. It is now established that ammonia is by far the most effective means of controlling fires in naphtha and oil refineries, and it may prove to have value in other cases.

LAST June a convention of the heads of the various departments or commissions of labor-statistics in the United States was held at St. Louis, and, apparently as a professional exercise, the members of the convention determined to visit the famous city of Pullman, Illinois, and see for themselves what was intended there, and how far the ends proposed had been attained. For this purpose a special meeting of the convention was ordered at Pullman, in September, and at the specified time thirteen gentlemen, perhaps as well qualified to act as judges in such matters as any thirteen persons in the world, met there to see how the people of Pullman fared in comparison with those of similar professions in other places. The report which they prepared for publication, after their investigations were concluded, has been very kindly sent to us, and although we could wish that its tone were a little less laudatory, it must be acknowledged that the statistics which they obtained in regard to the life of the place justify praises which it would be hard to keep from seeming a little extravagant.

LEAVING out of account the intelligence, or benevolence, or other merits of the founder of Pullman, which form a subject quite distinct from that of the success of his enterprise, we are told by the Labor Commissioners that in the last three years, during which the population of Pullman has increased from about one thousand to more than eighty-five hundred, the average annual death-rate has been seven and one-half in a thousand, or less than one-third the average rate for American cities in general, and about one-half that of places renowned as the healthiest in the world. Of course, this favorable showing is partly due to the fact that the inhabitants of Pullman, like those of all new towns, are mostly young or middle-aged, the decrepit or helpless having little reason for taking up their residence there; but, on the other hand, there are many little children in the town, more than half the deaths being of persons under five years of age; and, the industries of the place being almost entirely connected with railway management, and with a rather dangerous class of manufactures, there are many casualties among the adult inhabitants, the number of deaths from violence in 1883 having been seventeen, or nearly as many as those from all other causes combined except infantile diseases. This is certainly an extraordinary showing, and the means by which such healthfulness is secured for a population of no very exceptional character are worthy of earnest study. First among them is undoubtedly the excellent system of drainage. We need not dwell upon this, which has been often described; it is enough to say that the separate system of sewerage has been carried out in the town with great thoroughness and skill, the surface water being conveyed through large brick sewers directly to Lake Calumet, while house drainage is taken through glazed pipes to a subterranean reservoir, from which it is pumped upon the famous sewage farm. It is worth noting that the sewage delivered at the farm amounts to about one hundred gallons daily for each inhabitant, showing a very free use of water in the houses of the town. The area of the tract upon which the sewage is now utilized amounts to about one hundred and forty acres, the intention being to provide at least one acre for each one hundred of the population. Pipes are laid beneath the surface for distributing the sewage, which is strained of all particles more than half an inch in diameter by a screen at the reservoir; and the application of the liquid to the ground is made by means of hose, which can be attached at pleasure to hydrants placed at convenient intervals. The whole tract is underdrained with tiles in the usual manner, and the effluent water, which is found to be perfectly clear and wholesome, is conveyed to Lake Calumet. It is hardly necessary to point out the difference between this admirable system and the ordinary engineer's irrigation-farm, in which the unfortunate crops are drenched with sewage at all times, favorable or unfavorable, instead of being fed with it, as is done by means of the hydrant and hose, only when they need it; and persons interested in the subject will be likely to reflect that the wonderful financial success of the farm is undoubtedly due mainly to the adoption of this rational and scientific plan.

THE social and moral health of the Pullman community seems from the Commissioners' report to be looked after with as much care and success as its physical welfare. Among the methods by which habits of neatness and decency are inculcated, the most efficient is perhaps to be found in the tasteful laying-out of the streets, and the interesting variety and careful planning of the houses. If there is anything in Mr. William Morris's idea, that the life of factory operatives can never be made tolerable until they are provided with something to satisfy the sense of beauty innate in every human being, the mere attractiveness of the broad and sunny streets, bordered with trees and diversified with small parks, on which the picturesque little houses front, should prove very grateful to people accustomed only to the alleys lined with hideous barracks in which they are compelled to live in most cities; but the convenient arrangement of every dwelling, down to the humblest tenement, by which water is supplied in unlimited quantities in the rooms, and all garbage and sewage are removed by the public care, probably does still more to habituate the occupants to cleanliness and external purity; while the system of leasing under which every tenant's rent is deducted from his wages, although distasteful to those who insist upon what they call liberty in paying their bills, serves to inculcate principles of punctuality in money affairs which cannot fail to be useful.

DECORATIVE TILES.[1] — II.

DURING periods when men voluntarily deface, destroy and seek to hide from view all that is beautiful and pleasing in art, it is not to be expected that there would be produced anything in the shape of decorative tiles. The history of the revival in this line of manufacture commences in England with about the latter half of the present century. Mr. F. J. Wyatt's patent for imitating tesselated pavements with colored cement proved unsatisfactory, from unequal wearing, early in the century.

The experiments of Mr. Blashfield in this line with bitumen, colored with metallic oxides, also proved at first unsatisfactory; but he finally succeeded in some undertakings, and constructed an extensive and elaborate inlaid pavement on the plan of the Venetian *pisé* floors, after the designs of Mr. H. S. Hope, which is still, or was up to a few years ago, in a good state of preservation at the country-seat of the designer.

An important step towards the revival of the art was the mode of Mr. Singer of Vauxall, for forming tesseræ by the cutting out of thin layers pieces of the required form, which were afterwards dried and baked in the usual way. This patent also improved the method of uniting the tesseræ with cement, so as to form a slab of convenient size for paving, and some admirable mosaics were executed by him in this way.

In 1840, Mr. Prosser, of Birmingham, discovered that if the material of porcelain (a mixture of flint and fine clay) be reduced to a dry powder, and in that state be subjected to strong pressure between steel dies, the powder is compressed into about one-half its bulk, and is converted into a compact, solid substance, of extraordinary hardness and density, much less porous and much harder than the common porcelain, uncompressed and baked in the furnace. The applicability of this ingenious process to the manufacture of tesseræ for pavements soon afterwards occurred to Mr. Blashfield, who made arrangements with Messrs. Minton & Co. (the manufacturers appointed to work Mr. Prosser's patent) for a supply of small cubes made according to the new process; these he submitted to various trials and experiments, and having found them in every respect suitable for the purpose, he, in conjunction with Messrs. Wyatt, Parker & Co., carried out the invention on an extensive scale. Tesseræ of various colors and forms — red, blue, yellow, white, brown; quadrilateral, triangular, rhomboidal, hexagonal, etc., have been manufactured on this principle in large numbers. Pavements of considerable strength have been constructed with them, and they have been found to possess the following advantages: First, being formed in similar steel dies, they are of uniform size and shape, so that they can be fitted together accurately, in the execution of the most complicated designs. Secondly, being all composed of the same material variously colored, they are all about of an equal hardness, so that pavements made with them are not liable to wear into hollows by use. Lastly, owing to the effect of the intense pressure under which they are made, they are quite impervious to moisture, of a flinty texture throughout, and, in a word, to all intents and purposes imperishable, except through sheer wantonness.

Another and later method than that invented by Mr. Prosser, that of using dust-clay, is known as the "Boulton and Worthington process," and is used by Malkin & Co. It consists in the use of metallic boxes, fitted with plungers, and fashioned like the arabesques or other patterns, to be used as ornaments, in which the "design-clay" dusts are compressed within a frame, which frame is afterward — the boxes and plungers being first removed — filled with clay-dust of the ground color, which is compressed within the frame and around the pattern made as stated, and the whole then fired.

The great perfection to which this important branch of pottery has arrived in so short a period of time is largely due to the great energy and practical intelligence of Mr. Herbert Minton, in England; and the firm of Minton & Co. is so well known in connection with it that there is no necessity for enlarging upon their achievements.

The very rapid progress that has been made in this refining art in England is an accomplishment of which all English-speaking people are justly proud. The hand-painted "art-tiles," richly-glazed enamelled tiles, and embossed and glazed majolica tiles produced in England are marvels of beauty, considering the short time since the revival of the art of their production.

[1] Continued from page 68, No. 476.

As we have stated, the tiles which have been named are very beautiful, and it hardly seems just to compare the present production of tiles in England with another branch of the ceramic art, and with a people who have fostered a national passion for the production of beautiful porcelain and enamel ware for more than a thousand years. But the subjects of hand-painted "art tiles," and glazed enamelled tiles of all kinds, are so closely allied to the glazed and enamelled productions of the whole world, that there is an almost irresistible impulse to compare and examine the designs and enamels of old and new Japanese productions, and then we are sadly impressed with the fact that, with all our boasted culture, refinement, morality and higher civilization, we are immeasurably their inferiors in this cherished branch of knowledge. The artists of Japan are more truthful, sympathetic and faithful in their delineations of birds, foliage and flowers than we are; they seem to discover, as if by instinct, the salient points of natural objects, and to portray them in form so true, in feeling so soft and appealing, yet in manner of treating so strong and striking in all their details, that we pause, admire, wonder; but to imitate seems impossible. "They confine themselves to no particular object; no one subject receives more care or consideration than another. From the highly cultivated, magnificent flower of gigantic proportions, to the humble, shrinking, modest daisy hiding away in the high grass, as well as from the strong, sturdy fir tree to the dwarf oak, that can hardly be seen, from the imaginative *Ho-ho* down to the most insignificant inhabitant of the feathery kingdom in their sunny island home, all are impartially treated." As we stand in the Kensington Museum and gaze upon the specimens of Hizen ware, Satsuma *faïencée*, Ise, Kaga, Kioto, Owari, and other most beautiful productions of a country abounding in glorious artists, there is pure admiration, unabased by any lower feelings. As a people the Japanese are much closer observers than any other nation. In their holidays they gather from the woods and from the fields natural objects, carry them to their city homes, preserve them as long as possible in all their beauty, and when they perish, reproduce them in artificial representatives.

But this branch of pottery cannot be further enlarged upon in the present paper, and the expressions of admiration were betrayed even as my eyes, at the instant when these words were first penned, feasted upon some beautiful specimens of the wares which have been named.

Having devoted so much space to a description of the development of the art of decorative-tile making in Europe, it is now proper that we should speak of what has been accomplished in our own country. The largest manufactory in this country for the production of encaustic paving tiles is that of the United States Encaustic Tile Company, of Indianapolis, Ind. Their productions are good and are mostly vestibule and paving tiles. The most prominent productions of decorative tiles are those from Chelsea, near Boston, Mass. The good execution of designs in these tiles is fast making them very popular, and there is no doubt but that the works at Chelsea are only the advance guard of numerous productive industries of this country, which are destined soon to lead those of Europe.

Sending tiles to Staffordshire may seem to the majority of Englishmen a wild improbability, but ere long that fact will be accomplished. One thing which greatly aids us is the tendency of English manufacturers in this line to lower the high standard of their wares and produce something cheap; a course which is a great error. Indeed this policy of sacrificing everything, including the actual producers themselves, to cheapness, too entirely dominates the English mind, with results which have been harshly but properly characterized as "cheap and nasty," and which also causes the brutalization of humanity. All true art demands high standards, which must be rigidly adhered to: seek to elevate them you may, without harm, but to do aught to lower them is but to take a step on the road to their destruction.

Much credit is due in the production of decorative tiles to the efforts of Mr. J. G. Low, of Chelsea, Mass. The art-tiles manufactured in this country had hitherto been poor, both in design and execution, until Mr. Low turned his attention to imparting to plastic clay a new character of artistically finished and pleasing delineations of animate forms, flowers, and conventional ornaments. America possessed nothing in this line of production that was a fit subject upon which we could lavish praise, or that in any way catered to our finer feelings. But that period is now happily past; the exhibition of 1876 injected into us as a nation new conceptions of the ideal, the natural, and the beautiful in art. Symmetry, expression and truth in no class of composition were generally appreciated; amongst a small proportion of the cultivated there were, of course, exceptions, and I do not mean now that the whole country has so rapidly been educated in this particular; but I do maintain that a much larger number have been drawn to give time and study to this subject, and that the art-schools of Boston, New York, Philadelphia, Baltimore, Chicago, St. Louis and other portions of the country have been stimulated to achievements which are more than simply creditable. The influence which such institutions exert upon all the arts and manufactures of our country cannot be over-estimated; there is no rule by which it can be computed, and no basis upon which to form a rule.

But that all the purposes of civilization, purity and religion, or the opposite, can be greatly aided or retarded by the effects of art, there is not the slightest room for doubt. Eloquence, high power of analysis, and gentle persuasiveness are equally potent with delineative art in portraying to the mind the truths and principles which build up

and strengthen character, and advance man in the paths of progress and industry, or that weaken and precipitate him in the sea of debauchery and indolence. From the earliest times man has been enervated by such grossly sybaritic but artistically executed designs, so common upon the tiles taken from the ruins of Pompeii and other Italian cities; the luring songs of the siren have been effective in all ages; the downward path has at all times been easy to travel. To impede this and aid to combat it, art has also been employed in all its forms for good. Who can look upon the works of the gifted and chosen contained in St. Peter's, Westminster Abbey, Canterbury, and other cathedrals, and some of the priory churches of Western Europe, and view their paintings and mosaics on dome, ceiling or walls, tread their tiled pavements, formed in all kinds of beautiful figures, bordered with flowers and traceries of vines, fruits and geometrical forms, and then fail to feel the elevating influences of art?

The success of Low's tiles has been steady and at the same time rapid, for less than a year and one-half from the commencement of their production we find them in competition with the tiles of the most famous potteries in the world, with the results of long experience to guide the selection of the articles exhibited, as well as a large and great variety in stock from which to select, on the part of their competitors, while on the part of the American tiles the selection was hastily made from a then meagre stock, and hurriedly shipped to the place of competitive exhibition, which was at Crewe, England. The first premium was awarded to Low's exhibit, and it was for the "best collection of art-tiles of English or American manufacture, hand-painted, impressed or embossed, relievo or intaglio."

The American tiles for which the above premium was awarded have everywhere given the greatest satisfaction: they do not assert themselves by a general misapplication of colors. Brilliant pictorial colorings are not in any way objectionable when the design is properly executed and the colors harmonize, which is too seldom the case; but the Low tile resistlessly attracts by the very simplicity and beauty of the shades of the single tone of glaze in which its modelled reliefs are dreamily suggested, and which appear like seemingly breathing forms. These tiles have won their way by simple merit of execution, while many of the English tiles are upheld to-day not from any such cause, but simply upon the high and often inherited reputation of the house that produces them, while the heads of such houses are not and often never have been artists, nor have any of the junior members of the firm been so educated.

But to speak plainly, and I certainly hesitate, much preferring that some stronger hand than that which now holds this pen should write the words, I mean that English art in the whole line of artistic pottery has reached the highest point of development that it can ever attain under the present constitution of its society, and, what is more, it has been stationary, and is now on the decline. The many art-schools which are established in various parts of the kingdom may impede somewhat this fall, but the ultimate and complete destruction of this branch of art is, under the present system, but a simple question of time.

The saying, "Once a potter, always a potter," is literally true of England, and if any interpretation can be put upon it, it means that they form a separate class or caste. However deserving, how many among those decorative artists who have reached the topmost points of their professions during the past decade have attained the absolute control of any decorative-pottery manufactory in England? How many to-day are even admitted into the different firms, in any sort of interest to entitle them to the slightest control? Alas, not one, and potters they must stay. They cannot break away from the chains which hold them in their caste; they cannot establish themselves, no matter how much merit they possess; potters they must live, and potters die, as their fathers have done before them. In the face of these facts, there can be but one result, or all past history is an error: to simply recall the effects of the caste system of Egypt is all that is necessary. It has been constantly the same; it is the great evil which has always and everywhere been destructive to art and progress. In Egypt the station of every man for life was fixed by caste, and the individual could not make his own way and fortune in the world, but must follow the accident of birth, and if his father was a potter, he must be one also. In England, of course, there are no such laws written in the books and enforced, as other legal enactments, but it is written and stamped into the customs of society, and such customs are often of much greater force than the strongest legal measures could possibly make them.

There is a freedom and encouragement in art matters that is innate to America, and that does not exist in England nor so largely in any other portion of the world. It is true that there has been in our country during the past nearly quarter of a century an absorbing ambition for money-getting, which is only a natural consequence of the effects of our great civil war, the founding of an extensive and liberal system of banking, the enormous construction of railways, and other means for communication, and the consequent unprecedented development of our manufactures. But with all this rush for wealth, art and progress have not suffered, for many who took pleasure in its accumulation have also experienced pleasure in its proper distribution. Those who had families rejoiced in giving to their children the means of education and culture, and those with families and those without have also been liberal to the public. Art schools and galleries, universities and colleges have been founded almost without number. Girard College, Johns Hopkins University, Lehigh University and other institutions, as well as libraries, art schools and galleries which it would require page after page to enumerate, are all the results of the strife for wealth; but in no other country on the globe has there ever been witnessed such liberal and unparalleled generosity to the public.

But let us return to our subject, from which we have strayed farther than was our intention. The glazed tiles for decorative employments are usually of four classes, and are commonly called "art tiles," enamelled tiles, embossed majolica tiles, and encaustic tiles. The first-named are usually hand-painted, and are employed largely for decorating grate cheeks, pilasters, and cabinet-work. The enamelled tiles are also employed for the above purposes, as well as for flower-boxes, wall-linings, string-courses, and other purposes of architectural decoration; and the embossed majolica tiles are also employed for the same purposes. Encaustic, plain and mosaic tiles are employed for pavements. Inlaid encaustic glazed tiles of extra thickness are used for hearths, and self-colored glazed tiles, of white, celedon, turquoise, olive and buff colors in squares, or of geometrical form, are largely employed for wall-linings.

Decorative tiles may also be described, according to their decorations, in another manner: First, those made with flat surfaces, and either of a natural or artificial monochrome, without designs, called "self-colored," or ornamented with surface enamel, or painted in outline, monochrome, or polychrome; second, those made with flat surfaces, inlaid in chromatic patterns to a slight depth, otherwise known as "encaustic tiles;" third, those made with designs in relief; fourth, those made with irregular, incised, indented or depressed designs, having texture in the depression. Either of the last two sorts may be painted in monochrome or polychrome, and either of the four sorts may be glazed either with a colorless glaze or with a colored glaze, or may be enamelled.

But up to the present time, so far as the writer is informed, only one class of relief tiles or intaglio tiles having texture in the depressions have been made in whole or in part by compression, out of clay-dust, and certainly no tiles excepting Low's, having undercut designs, have been made in any part out of compressed clay-dust.

In the production of his designs and tiles, Mr. Low proceeds as follows: he uses a plastic material, like paraffine, and places it in the tile-frame of the tile-compressing machine, and subjects it to pressure, thus producing a flat, thin, plastic plate, of about the thickness of a tile; or he takes a quantity of clay dust and similarly compresses it, and saturates this dust with paraffine. The upward-presenting surface of this plate is then plentifully sprinkled with pulverized plumbago, which is compressed into the surface of the plate, which may be engraved with any desired pattern. After engraving, care is taken to cover the plate with black-lead powder, brushed on with naphtha or any other solvent of paraffine as a vehicle, or dusted on to a slightly-warmed surface, or stippled on with a stippling brush. The parts of the plate denuded by engraving can be used as an electrotype mould to make a reverse, and the electrotype used as a matrix to make an obverse. These electrotypes, well backed, as when used for printing, and set in steel or other strong boxes, to prevent crushing the backing, will serve as dies for making the intaglios and reliefs for stamping tile in dry clay-dust. In case high reliefs are desired, the clay and paraffine plate may be carved as desired, carefully avoiding undercutting, and then covered with its plumbago surface by the naphtha process or stippling, and electrotyped and used as the die. When high reliefs, which it is desirable to undercut, are to be produced, the mould is made so that the compressed clay will draw, and the main part of the design being thus formed, the modeller carves the undercutting by hand, the clay being sufficiently tenacious when compressed to allow this, and the finished tile, partly hand-made and partly machine-made, is then fired.

For obtaining textures, low-reliefs, or intaglios of natural objects, Mr. Low preferably adopts the following manipulation: having formed the compressed plate, the lower platen of the tile-machine is raised until the upper surface of the compressed plate is conveniently near the top of the frame of the tile-machine. Bits of woven stuff, lace, pieces of embossed paper, leather, or other fabric, leaves, grasses, flowers, or other objects having suitable textures and outlines, such a design as will be attractive, are laid upon the plate, and the lower platen of the tile-machine is then let down to its place, and the upper plunger is then brought with strong compression upon the objects.

By the above means the patterns are indented in outline and texture in the plastic or clay-dust surface, even overlays being represented with an accuracy absolutely true to nature, and always in intaglio. As we have already stated, this intaglio may be used as a mould for electrotypes, when properly made, by the use of pulverized plumbago as a surfacing agent; but in practice it is usual to take this matrix so made, and place over it a diaphragm of thin, tough material. The best and cheapest substance for the diaphragm is the thin Japanese paper, of uniform texture and great toughness, such as appears in the Japanese handkerchiefs and napkins, so called. Upon the diaphragm, which must exactly cover the surface of the intaglio, there is next laid the dust of surface and body clay of the tile to be embossed, which is subject to compression in the ordinary way, and thereupon, on raising the plunger and platen, the intaglio and relief may be separated. The diaphragm always adheres to the relief, but is readily peeled from it, and if the intaglio is properly handled, it will be found uninjured during several hundred impressions. The sharpness and definition of texture of reliefs made from dust-clay intaglios are very remarkable, and a tile compressed from dust, from

its homogeneous quality, is much less likely to warp or shrink unevenly in firing than any other, particularly if packed in a less fusible powder, like quartz grains or canister, in firing, as is not unusual with terra-cotta relief work.

Of course the tiles made as we have described may have their intaglios filled with, or their reliefs covered with kiln colors, slip or enamel, either while simply clay or after firing, in any way and at all times proper in tile-making for such application.

CHARLES T. DAVIS.

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page 86, No. 478.*]

THE POLLUTION OF STORAGE RESERVOIRS.

Statue of Col. Beaurepaire by M. Bourgeois. at Coulommiers France

AT the regular meeting of the Engineers' Club, of Philadelphia, February 7, 1885, the Secretary presented, for Mr. A. Harvey Tyson, a paper upon the Sources of Pollution in Storage Reservoirs, from which the following is extracted:

"As City Engineer of the City of Reading, my experience concerning the subject of this paper is gathered from my connection with its Water-Works. Previous to the year 1880, during which the Antietam Lake, with a storage capacity of ninety millions of gallons, was constructed, the supply of the town was small. Citizens were satisfied with water of any kind — it was not a matter of quality, but of quantity. There was an occasional grumble about the condition of the water served consumers, but in a few days the impurities would disappear, and the state of public opinion would return to its normal condition. During the construction of the dam named, there was quite a perceptible increase in the impurity, as the water had a woody taste, and when left standing for five hours or more emitted a very disagreeable odor. This was attributed to the fact that the banks of the streams passing through the dam, and the flows of which were to be impounded, had been cleaned and grubbed. The bad taste and odor lasted for three weeks and then ceased. About the first of August of the next year it again presented itself; this time in a worse form, the odor remaining the same, but the taste had changed, and resembled that of fish-oil. The suggestion was made that there was a deposit of filth in the pipes, and with a view of removing such, if it was the cause, flush-valves were placed in all depressions in the pipes and at the dead ends, and these, as well as the fire-hydrants, were periodically opened. This did not remove the difficulty and improve the water. The parts of the city served directly from this storage reservoir were the only ones in which this impurity was noticed; those served from the distributing basins showed no signs of it. The entry into the latter was through fountains which threw the water to a height of seventy-five feet, thereby thoroughly oxidizing it and removing the impurities. An examination into the cause of the trouble showed that, instead of having the natural blue-green color, it had a bright green, and, when left standing, the impurity came to the surface and discolored it. Whenever, during the ten weeks within which the odor and taste remained, the thermometer for more than a day fell to below sixty-five or seventy degrees Fahrenheit, the impurity disappeared, to return again when the temperature exceeded seventy or seventy-five degrees. An examination of the lake developed the cause of the trouble to be a vegetable formation, which, when alive and scattered through the water, gave no noticeable taste or odor to the water, but, in its decay, became highly offensive. As to what this vegetable formation was, the botanists differed. My conclusion, on a microscopic examination, was that the growth was of minute confervoid algae, whose germ was the clorophyl, or coloring matter of leaves. The plant itself, when gathered from the surface, seemed to be without disagreeable taste or odor, but when exposed to the heat and light of the sun, rapidly fermented and became very offensive. This plant, when in subsiding reservoirs subjected to the sun's rays, grows rapidly, and, when drawn into the distributing pipes, the want of air causes decay, and, as a result, *taint*.

"With each succeeding year the trouble has returned, grows worse and remains longer. Nor is it local in its development. The result of correspondence with over one hundred towns and cities where water is impounded proves that the trouble has shown itself in a greater or less degree everywhere, and how to avert and correct it has been the problem worrying the hydraulic engineers. Numerous plans have been proposed, from oxidation by flow through open channels or artificial aeration, to the gigantic scheme of roofing in the reservoirs to remove the effect of heat and light, and so remove the cause of the development of this new but unpleasant affinity. Future experiment will demonstrate the most feasible plan, but, from my experience, I would say that natural aeration is the best, for the reason that the water in our small distributing reservoirs, which enters through the fountains as stated above, has always been pure.

"The trouble is comparatively modern. Ponds and sluggishly moving streams which were sweet twenty years ago, as I loitered along them, are now affected in a like way, without any change of conditions. They are affected by the climatic change which the country is undergoing. Steady rains have ceased, and the precipitation is sudden and rapid.

"Chemical analyses of our affected water have shown that there is nothing deleterious to public health, although it may be exceedingly disagreeable. Examinations for the last three years resulted as follows: —

	1882.	1883.	1884.
Free ammonia	.0028	.0027	.0035
Albuminoid ammonia . . .	.0175	.0175	.0133
Chlorine	.2900	.2950	.3000

"Also, with the increase of pollution from this source, there has been a corresponding decrease in the death rate, which, from the records of the Board of Health, is as follows: 1880, 20.1 per 1,000; 1881, 21.0 per 1,000 (scarlet fever epidemic); 1882, 20.0 per 1,000; 1883, 19.0 per 1,000; 1884, 18.9 per 1,000.

"The facts as stated above, that this source of pollution is not deleterious to public health, should not allow engineers and local authorities, by an appeal to the purse, to let it pass by without some determined effort at correction, as it may tend to the development of some characteristic which would be damaging."

Mr. Charles G. Darrach discussed the subject at length. He said:

"Data collected during the past seven years disproves the old theory that, as an approximation, we may estimate a daily average yield of 1,000,000 United States gallons (133,370 cubic feet) per day, per annum, per square mile of catchment area, or the utilization of 23 inches of rainfall. In fact, but one-half this amount should be estimated. We are, therefore, forced to increase the storage capacity to tide over dry years, calculating the average yield of twenty-four or thirty-six months, instead of twelve months; in so doing, the depth of the collecting storage reservoir is increased, and it is to this point your attention is directed.

"In 1875 I noticed that the water, drawn from a depth of fifty feet in Tumbling Run Dam, was very offensive in odor; but after contact with the air the water became odorless and potable, similar to the water on the surface of the dam."

He then presented a detailed account of the similar trouble in the Baltimore water-supply, and his correspondence and experiments with Mr. Robert K. Martin, Chief Engineer, and concluded as follows: —

"In the paper before us it is stated that while the water drawn from the pipes leading from the collecting and storage reservoir was bad, it improved after being discharged into the distributing basins. Mr. C. S. D'Invilliers (member of the Club) informs me that it is his impression that the collecting reservoir for the city of Reading (that mentioned in the paper) is about seventy feet deep,[1] and that its capacity is great compared with its catchment area. I do not remember the data of the completion of this reservoir, nor the length of time the water has been stored; it is probably two or three years. Light would be thrown on the subject did we have before us all the data as well as the plans of the reservoir.

"From the data furnished by Mr. Martin, the water in Druid Lake seems to have fouled in two years, from 1881 to 1883. A theory which these facts seem to indicate is that products of *decaying* vegetation sink to the lower water in deep reservoirs, where decomposition is suspended for want of oxygen, the gases are absorbed by the water, which gases, upon contact with the air, are fully oxidized.

"As a prevention, surplus water should be wasted from the *bottom* of the deep reservoirs, and not over the weirs; as a cure, *aeration*, by means of shallow distributing reservoirs, receiving the water on the surface, and, if possible, from fountains.

"In 1881 the newspapers of Baltimore stated that, as chemists had failed to discover impurities after testing the water which caused complaint, it was probably because Dame Nature had forestalled them."

Dr. H. M. Chance was of the opinion that in the great fresh water lakes we had conditions analagous to those present in artificial storage reservoirs, and therefore asked if any member could tell whether any examinations had been made into the condition of the water at considerable depths. If this was found to be fresh and of good quality, similar, in other words, to the water near the surface of these lakes, then an inquiry into the conditions which protected it from contamination, or purified it, would be of great value; but if, on the other hand, the water at great depth was found contaminated in the same way as that in storage reservoirs, then it would be useless to look for any natural phenomena to assist in purifying stored water,

[1] The Secretary has since learned from Mr. Tyson that the Reading reservoir is forty feet deep, and water is drawn at three depths: twelve feet, twenty-four feet, and thirty-six feet. Mr. Tyson adds: "Thinking that the defect in our water was caused by the draught (through the defective construction of the valve tower) of bottom water, an outside stand-pipe, with valves at the same height as above, was constructed this autumn. What the result will be, next summer must demonstrate."

and reliance must be placed upon some artificial method. He believed the subject was of sufficient importance to warrant an immediate investigation into the character of the deep water of these great lakes, and thought that, until this was done, sanitary engineers, in declining to avail themselves of this knowledge of natural laws, were committing a great mistake, and were necessarily working in the dark.

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page 86, No. 478.*]

A FEW HINTS ABOUT SOUND CASTINGS AND FACTORS OF SAFETY.[1]

So many disturbing elements intervene between the conception of a design in cast-iron and the completion of the work in the building, that we all have to allow what we call a factor of safety (aptly characterized by the late Alexander L. Holly, C. E., as a factor of ignorance) to cover these contingencies, varying from three, or one-third the breaking strain in very simple cases where the quality of the castings can be depended upon, to five or even ten where the design is more intricate, or the liability to shrinkage strains, hidden defects in the castings, rough bearing surfaces or uncertain variations of the load are possible. Much can be done by designers of cast-iron work to reduce this factor of safety, and consequently the weight and cost of castings, by giving serious consideration to the many processes and changes of condition through which their designs pass on the road to the building. Foundrymen exercise great ingenuity in producing any design in iron that may be presented to them; still it is possible to design things that are totally impracticable in cast-iron, in which case the designer would probably be asked to modify his drawing, but when it is possible to carry out a design without change it is the almost universal practice to do so without comment and without recollection of the fact that the resulting castings may have very serious shrinkage strains or other defects, which would reduce the strength far below what the designer expected. For instance a column, say sixteen feet long, eight inches in diameter, three-quarter inch metal, is sometimes designed with a heavy projecting base moulding near the bottom, say twelve or fourteen inches in diameter, giving three inches or more thickness to the metal at that point, also having an extension of the shaft to pass down through a shell plinth or pedestal, while at the top there is a shell cap and then a shelf, say twelve by twenty-four inches, for girders, made, possibly, two and one-half or three inches thick, to insure strength without the use of brackets or ribs. This, like all other architectural work, will be moulded in "green sand," which is moulding sand slightly dampened with water and rammed solidly around the wood pattern, forming a mould strong enough to withstand the wash and pressure of molten iron running into the mould. When we consider that iron weighs four hundred and fifty pounds per cubic foot, while water weighs only sixty-two and one-half, an idea may be formed of the strength of mould necessary to stand the wash and pressure, which, in a mould three feet high from the bottom of the casting to the top of the gate, where the iron is poured in, is fourteen hundred and forty pounds per square foot, nearly three-quarters of a ton on each square foot of surface: consequently the sand must be firm.

Now, realize that the pattern for this sixteen-foot column is made sixteen feet two inches long, to allow for shrinkage; also remember that when this shrinkage occurs something has got to give. The shaft of your column being only three-quarters of an inch thick, will solidify and commence to shrink, while the metal in your heavy base moulding and the shelf at the top is still fluid, and a little metal will run out into the body of the column as it draws away in cooling, leaving a little vacancy or depression in the upper part of the shelf or base. Presently these heavy parts will become about the consistency of cheese, but the shaft of the column keeps on cooling and getting shorter. Now the situation becomes serious. The soft metal in the base and shaft is not solid enough to allow the column to draw them bodily through the sand mould, so they stay where they are and the column shrinks away, stretching out more of the soft metal after it, making a weak place or leaving a nice little crack to be filled up with putty before the column is painted, and in an extreme case pulling away so much that the head will drop off when the column is hoisted out of the mould. Then the foundryman looks wisely at the column and says, "Now I will fix you," and puts a fillet around below the shelf, or a bracket, which will cool quickly and help pull, chipping out the bracket when the column is cold. In case all these fail, he just lays in some cold pieces of pig-iron before closing the mould, and they cool the heavy places off rapidly and everything is lovely. This last makes the soundest job in the lot, as they all melt down together; still there is liable to be dirt on the surface, and shrinkage strains that would not be there if the designer had made his metal in the shelf only one and one-quarter or one and one-half times as thick as the shaft, put in some strengthening ribs or brackets, and had also made his whole base shell, except a small bead or fillet, thereby justifying a smaller factor of safety and allowing all parts to cool at the same time. Mullion columns are often designed with a heavy square face cored out, which stands in front of the wood frames, while a thin web runs back between the sash-weight boxes. This is an exceedingly hard shape to cast without shrinkage strains. The cored part in front only radiates heat from one side (the core being quickly heated through), while the webbed back runs away off towards the remote parts of the mould, giving off heat on both sides, and the extreme back edge radiates in all directions but one, thereby cooling much faster than the front part, so that when the back has attained its length for normal temperature the front is still red-hot, and much longer. When the front cools there results a strain, which gives this column all it can do to hang together until it gets into the building, without doing its full share of work after getting there. Moral: A good, liberal factor of safety, or a nice large rib of metal, round or square, on the back of the web to keep it from cooling too fast. The privilege of modifying the thickness of parts of castings to avoid shrinkage strains is one that a designer can safely give a foundryman, for it is always cheaper to make castings right than wrong, to commence with. Still, any foundryman can call to mind numerous instances in which he has received serious rebuffs when he has volunteered advice which he considered good to designers who did not care to hear it, consequently they are often backward about volunteering their opinions. Unequal cooling and consequent crookedness of shell pilaster faces, frieze plates and light ornamental work is usually corrected by the foundryman without asking the designer's permission, as it is utterly impossible to get light work straight without providing for equal and uniform cooling. But in the manufacture of thicker pieces and parts intended to sustain loads of any kind, the foundryman never makes changes or asks permission to change, if he can possibly execute the work as per drawings received. Generally speaking, a more intimate association between designers and executors of cast-iron would result in a great saving of metal and a reduction of the factors of safety. Imperfect and unsound castings, owing to carelessness in the manufacturing, are much more rare than is generally supposed. Cold shuts from pouring the metal too cold, honeycombs, dirt and scabs from soft or unclean moulds are quite rare, and never dangerous in the work of reputable foundries. Many more bad castings are made through an honest endeavor to carry out a design which is not positively the best thing possible for the place than from carelessness in the execution of the work.

Among the most noticeable indications of shrinkage strains in finished castings is crookedness. One side will be shorter, thereby giving the whole piece a crook, or in the case of wide plates they sometimes appear with the centre perfectly straight and both edges "loose," or apparently too long for the centre. The same may be said of the thin back ribs sometimes put on mullion columns. This comes from the apparently long parts cooling first, so that when the heavier parts cool afterwards the light parts are left too long for their places, while the loss of strength incident to these causes is usually provided for by the enormous factors of safety used. Still, if designers would examine their castings carefully they would soon be able to design forms not liable to these defects, and reduce their factors of safety accordingly.

Any foundryman will be only too glad to show designers of cast-iron work through his shops, and will be able to point out many important conditions affecting the success and quality of castings, which our space will not permit us to mention. We feel confident that as architects and designers of cast-iron take a closer interest in the numerous processes of the foundry they will appreciate the fitness of and use cast-iron more frequently. C. W. Trowbridge.

[1] A chapter taken from the hand-book of the Union Foundry and Pullman Car Works of Chicago.

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page 86, No. 478.*]

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

COMPETITIVE DESIGN FOR BARN, SUBMITTED BY "*Hostler.*"

The building will rest on stone foundations 15″ thick, and 4′ below ground. The wooden sill to be 6″ x 6″, on which will rest 2″ x 4″ studs. Balloon-framing will be employed: hence, a 1″ x 6″ strip let into studs to receive upper joists which will be 2″ x 9″; lower joists 2″ x 10″. Rafters 2″ x 7″ resting on a 4″ x 6″ plate. The whole exterior to be sheathed with ⅞″ boarding, and this to have first a layer of thick felt paper, then to be covered wholly with shingles, which are to be left untouched by oil or paint. The coach-room and stables to have ⅞″ x 3½″ strips of wood nailed horizontally on studs below window-sills, and about one foot apart. The coach-room to have double sliding-doors, but outer stable-doors to be halved horizontally, and hung on hinges. The harness-room will have cases with glass-doors. The ground floor will have 2″ plank flooring, except the floor behind stalls, which will be of cement, and the stalls which will have dirt floors with a rise of 2″ in the length. Mangers to be of wood. Stall partitions to be of 2″ planks. All to have galvanized-iron capping. The loft to have 1″ flooring. The joists and rafters all to show rough from below. In the alternative sketch, the harness-room with man's room would be rounded out to form the

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OUR STAINED BUILDINGS, DECAYED STONE, ETC.

ONE of the things most noticeable, and which strike the eye of the careful observer when viewing comparatively new buildings in any of our cities, the most unpleasant are the unsightly discolorations and stains which disfigure their surfaces, especially where the ordinary projections or embellishments occur. This is also the more particularly observable where brick and stone work are in contact. In many cases the disfigurements are so bad that the effect of the design is destroyed, and what would otherwise be "a thing of beauty and a joy forever" is then only a source of disgust to the owner, an annoyance to the architect, and disappointment to the general public.

Again, not only does the above happen to new buildings, but another and more serious injury eventually presents itself in the decay and crumbling away of the stone-work, particularly of the well-known and deservedly popular brown-stone. In this case the building is permanently damaged, and the only repairs that can then be effected are the replacing of the decayed work by new stone, or by cutting away and refacing it at a great cost and inconvenience.

Our reason for referring to this is to bring to the notice of our readers a process for the preserving of buildings from the before-mentioned troubles, which are known to be caused by the destructive effects of the weather.

The "Caffall Process," to which we call attention, is owned and worked by the undersigned. It is not a new or untried process, but has been in use in several of our cities for about six years, and is highly endorsed by many of the leading scientists, architects and builders of New York City and other cities of the United States, who have closely observed its useful effects.

Its chief claims are that it is "invisible, impenetrable, insoluble, imperishable," and that it is the only *permanent* waterproofing yet discovered. It does not discolor the work to which it is applied; in fact, the brown-stone fronts and stoops which have been treated with it in New York City look brighter and clearer, and are in every respect improved in appearance, in addition to the advantage of being permanently preserved from decay, stains, fungoid growths, the destructive effects of frost, etc.

Also, besides the prevention of the disintegration of stone and the weather-staining of brickwork, it preserves the mortar joints and prevents the efflorescence of the white salts which ruin most of the best buildings.

The compound used is *not* a fluid like oil, paint, etc., which are simply superficial applications that perish quickly, and are liable to crack and peel off, but it is a *solid*, indestructible substance, burnt in by heat, which upon cooling, as it quickly does, renders the surface of the work, to a considerable depth, a perfectly hard, impenetrable and imperishable body, which cannot be injured by acids, alkalies, moisture, the extremes of atmospheric heat or cold, or by any other cause.

It appears to us that an invention of this kind, so well endorsed and proved, and so long looked for and desired, should command the careful attention of all interested in buildings — owners, architects and builders.

Take a building that has taxed so much the thought, taste and judgment of the architect in the preparation of its design — and only those of the profession can sympathize with him — so much the skill and care of the builder in its erection, and on which so much money has been spent by the owner in his commendable desire to have a substantial and handsome residence, and surely it is only wise to spend a further comparatively small amount to permanently preserve the whole from the ruinous effects of the weather which will surely follow exposure.

We do this with nearly everything else; why not with our buildings? If they are worth building well, they are worth taking care of.

It is this Process that was so fully and ably presented before the Convention of the American Institute of Architects, held at Albany, N. Y., in October last, by Prof. R. Ogden Doremus, and of which the President, Mr. Thos. U. Walter, LL. D., said, at the conclusion of Professor Doremus's address, that "it was one of the most important and most interesting subjects that had been brought before the Association since its organization."

This lecture has created a deep interest amongst the architects of this country, and the Process is already being put into their specifications as an essential to a good building.

Although buildings which have stood for years, and become stained and decayed, can be restored, yet the *best* time to preserve a building is immediately after it has left the builder's hands, and before it has become weather-stained, and this should be remembered by the architect in drawing up his specification.

THE BRICK AND STONE WATERPROOFING COMPANY,

55 BROADWAY AND 886 EIGHTH AVE., N. Y. CITY.

SEMI-GLAZED TERRA-COTTA.

THE semi-glazed terra-cotta for building purposes has of late years been introduced and manufactured solely by True, Brunkhorst & Co., the North-Western Terra-Cotta Works of Chicago, the terra-cotta pioneers of the West, who also manufactured the first red terra-cotta in this country. To avoid all misunderstanding it is expressly stated that semi-glazed terra-cotta is not shiny, unless especially so desired: it has a dull but smooth surface, produced by applying to its surface, before burning, a solution of fine clay, with some admixtures. The old practice of dipping the pieces would be objectionable in this process, as it would form a coat heavy enough to destroy the detail of the ornament. The solution is therefore put on by especial machines, and forms a coat so thin that even the most delicate ornament loses nothing of its sharpness by the semi-glaze, as is clearly shown by miniature samples sent free to applicants. The best terra-cotta manufactured heretofore, although nearly impervious to water still absorbs a small quantity of moisture, and with it soluble matter contained therein. Semi-glaze, however, like transparent glaze or enamel produces a surface practically impenetrable by any fluid. A fair test is the application of writing-ink to the surface of the material. On the semi-glaze it will not leave a trace, while from the ordinary terra-cotta it can never be entirely removed.

Most business blocks and a great many residences of recent erection in Chicago and all the West show specimens of semi-glazed terra-cotta, distinguished by their beautiful, deep-red color and even tint. For interior-work, hall-decorations, wainscoting, mantels, etc., this material cannot be surpassed in elegance combined with cheapness. Its main advantage over ordinary terra-cotta lies in beauty of color and cleanliness, the application of water in a sponge being all that is required to clean it. The entrance-hall of the new Pullman Building shows a fair specimen of semi-glazed terra-cotta as a means of interior decoration, and architects and builders visiting Chicago should not fail to see it. The North-Western Terra-Cotta Works continue also to manufacture the ordinary terra-cotta in all possible shades and colors, their manufacture in all branches being equal to any in the world. Their works occupy about three acres, and are located at the intersection of Clybourne Ave. and the Northwestern R. R., a side-track of this road facilitating the shipments. The main building is 100′ x 220′, three-story and basement, supplied with all modern improvements. They are now using nine large kilns, including two for porous terra-cotta.

In capacity, superiority of material and workmanship this establishment stands among the first of the kind in the world.

The following is a partial list of the more important buildings supplied with semi-glazed terra-cotta trimmings during the past season:—

Hiram Sibley Warehouse, Chicago, Ill.
Chas. Counselmann's Office-Building, Chicago, Ill.
Morgan, Root & Co., Store-Building, Cleveland, O.
Mahaska County Court-House, Oskaloosa, Ia.
Lewanee County Court-House, Adrian, Mich.
Dane County Court-House, Madison, Wis.
Private Insane Asylum, Geneva Lake, Wis.
Government-Building, St. Paul, Minn.
McCormick Estate, Chicago, Ill.
T. A Chapman's new Store, Milwaukee, Wis.
Abbott & Colby Block, Milwaukee, Wis.
Bassett, Hunting & Co.'s Store, McGregor, Ia.
Odd Fellow's new Hall, Oshkosh, Wis.
Haven School-Building, Chicago, Ill.
Ogden Estate Building, Chicago, Ill.
Foss Estate Building, Chicago, Ill.
Board of Trade Building, St. Joseph, Mo.
Silberstein & Bondy's Store, Duluth, Minn.
Iowa State Inst. of Feeble Minded, Glenwood, Ia.
A. Saunders Store-Building, Omaha, Neb.
A. L. Mason's Store-Building, Kansas City, Mo.
W. A. Paxton's Store-Building, Omaha, Neb.
S. H. Beidler's Building, Chicago, Ill.
Savings & Trust Co.'s Bank-Building, Cleveland, Ohio.
E. F. Drake's Store-and-Office-Building, St. Paul, Minn.
Tribune Co.'s Office-Building, Minneapolis, Minn.
Open Board of Trade-Building, Chicago, Ill.
Royal Insurance Co.'s Building, Chicago, Ill.
Trader's Safe & Trust Co.'s Building, Chicago, Ill.
Nat. German American Bank-Building, St. Paul, Minn.
Canal St. School-Building, Evansville, Ind.
Geo. Dulling's Business Block, San-Antonio, Tex.
Frank B. Smith's Building, Norfolk, Va.
Samuel Lockwood's Building, St. Joseph, Mo.
Gayosa Hotel, Memphis, Tenn.
Jas. P. Corse, Business Block, Racine Wis.
Pullman Palace Car Co.'s Office-Building, Chicago, Ill.
Erwine Case's Residence, Kansas City, Mo.
L. D. Webster's Building, Chicago, Ill.
K. B. Armour's Residence, Kansas City, Mo.
Wm. Frankfurth's Store, Milwaukee, Wis.
Atchinson, Topeka & Santa Fe Office-Building, Topeka, Kans.
Montezuma Hotel, Las Vegas, New Mexico.
Emerson's School-Building, Chicago, Ill.
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THERE are many planes upon which the rich and poor must meet alike on equal terms, but until very recently they have not been placed upon an equal footing in the matter of decorating their homes, for the reason that those who must practise economy must be economical of their time, and cannot therefore look as closely into the merits of the article they use as those who can well afford the time to give the subject the attention its importance warrants, and who, after obtaining the desired information, almost invariably purchase the best, which, in the nature of things, is usually worth more nearly the price paid than the cheap article, which at best is only a temporary substitute. Especially is this true of paints — so many and so varied are the claims made by competing manufacturers who must sell their wares, and who must sacrifice quality to meet the price of similar goods, that the user is at a loss to determine which is the best for him to use, and finally, upon the principle that "paint is paint," or that, as all are represented as being the best, he might as well take that which costs the least money per gallon, he gets an inferior article, and straightway expends upon its application a sum two or three times as great as the cost of the material, and in a year or two, at most, he finds he must paint again.

It is a well-known fact that the average cost of applying paint is from two to four times as much as the cost of the paint itself, and when this fact is taken into consideration, it would seem folly to expend from fifty to one hundred dollars for labor in applying twenty-five or thirty dollars worth of inferior paint, which will never have a satisfactory appearance, and after a year or so affords neither protection nor ornament, when the use of a strictly first-class paint, which would cost twenty per cent, or say five or six dollars more for sufficient to paint a small house, would insure a serviceable and always pleasing result for, at least, two or three times as long.

Without doubt many who have had experience with cheap paints, and who are deterred from keeping their houses well painted with handsome and enduring colors by the seemingly endless expense, will be glad to learn that it may be avoided, and we refer them to the illustrated pamphlet, "Structural Decoration," just published for free distribution by the H. W. Johns Manufacturing Company, of New York, who are the most extensive manufacturers in the world of paints for structural purposes.

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"THE largest room in Buffalo, and we believe in New York State, under one roof, and unbroken by pillars is the new State Arsenal on Broadway, which is 276 feet long, and 179 feet wide. The largest in the world is at St. Petersburg, and is 620 feet long, and 150 feet wide. This vast room is used for military displays, and a battalion can completely manœuvre in it. It is lighted by 20,000 wax tapers, and the roof is a single arch of iron; it exhibits wonderful engineering skill in the architect. As far as the lighting goes, however, Buffalo is ahead, using fifteen Frink reflectors, lighted by an electric spark." — *The Iron Review, Buffalo, N. Y.*

Among prominent buildings recently lighted are: Grand Central Depot, New York; New Alcazar, San Francisco, Cal.; Academy of Design, New York; Second Congregational Church, Holyoke, Mass.; Somerville M. E. Church, Brooklyn; Trinity M.E. Church, New York; College of Music, Cincinnati, O.; Stark Bros. Co. Store, Milwaukee, Wis.; First Congregational Church, Montclair, N. J.; Elite Skating-Rink, New York; Newark Skating-Rink, Newark, N. J.; Garland Opera-House, Waco, Tex.; Washington Gas Light Co., Washington, D. C.

I. P. FRINK,
551 PEARL ST., NEW YORK.

NOTES.

THE celebrated Cathedral of Zacatas, Mexico, said to have cost $2,000,000, recently sent to New York to have the design for its altar railing executed. The only parties willing to undertake this elaborate and superb structure, designed by a native artist, were the Composite Iron Works Co., of 83 Reade St. It has just been finished and shipped, and is in many respects an elegant and resplendent work of art. The material is real bronze, partly gold-plated, and partly nickel-plated and chased. It is in all respects a specimen of very fine metal-work, the pesign being very difficult of interpretation and execution, most of it being bent cold, interlaced, plated, buffed and polished, the intermixture of gold and nickel being effective and dazzling in appearance, especially when lighted up. Every four feet of its seventy-five feet of length, appears a large gold vase of floral design, in the calyx of which is made an opening to insert a huge wax candle of nearly three inches diameter. It is made in sections of twelve feet each (it being intended to place Mexican onyx pillars between the sections), and cost $5,000. The Composite Iron Works Co., turn out some of the most elaborate and artistic lodge gates, lanterns and grills made, and have ample facilities for executing the designs of architects, however intricate or expensive.

THE Cambridge Roofing Co., whose advertisement appears in alternate issues, have their different styles of roofing and siding exhibited at the New Orleans Exhibition. The iron is on a building 40′ x 100′, occupied by the S. C. Forsaith Machine Co., of Manchester, N. H. The iron is in charge of E. F. Gage, Agent for the above machine company, and Geo. Crowl, and both will be found in the building, which is plainly marked with their name.

The American Architect and Building News.

PUBLISHED EVERY SATURDAY BY
JAMES R. OSGOOD & CO., Publishers.
211 Tremont Street, Boston.

An illustrated Journal of Constructive and Decorative Art, devoted to the Interests of Architects, Builders, Decorators, etc.

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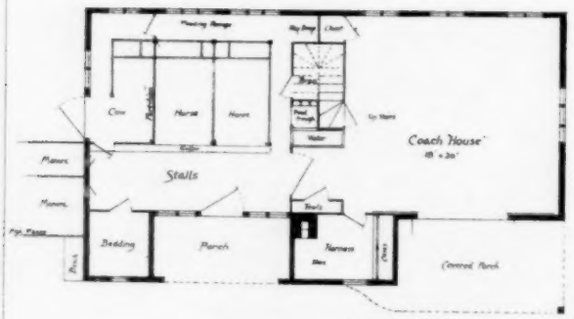
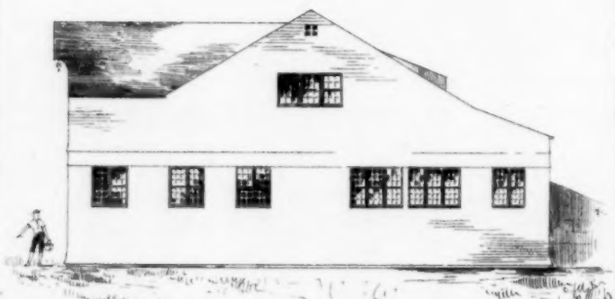
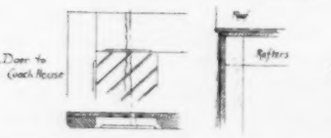
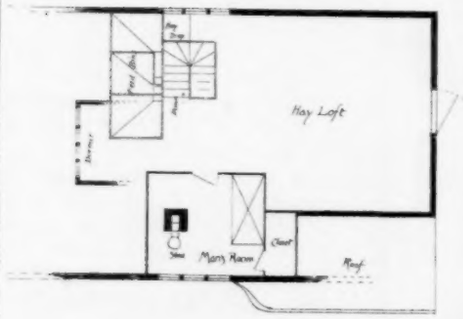
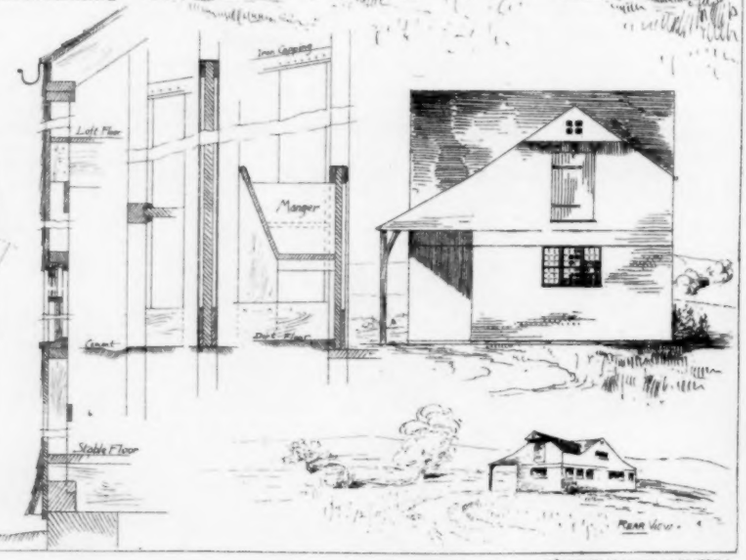
"ALTERNATIVE SKETCH"











Scale for Plans & Elevations

Scale for Details

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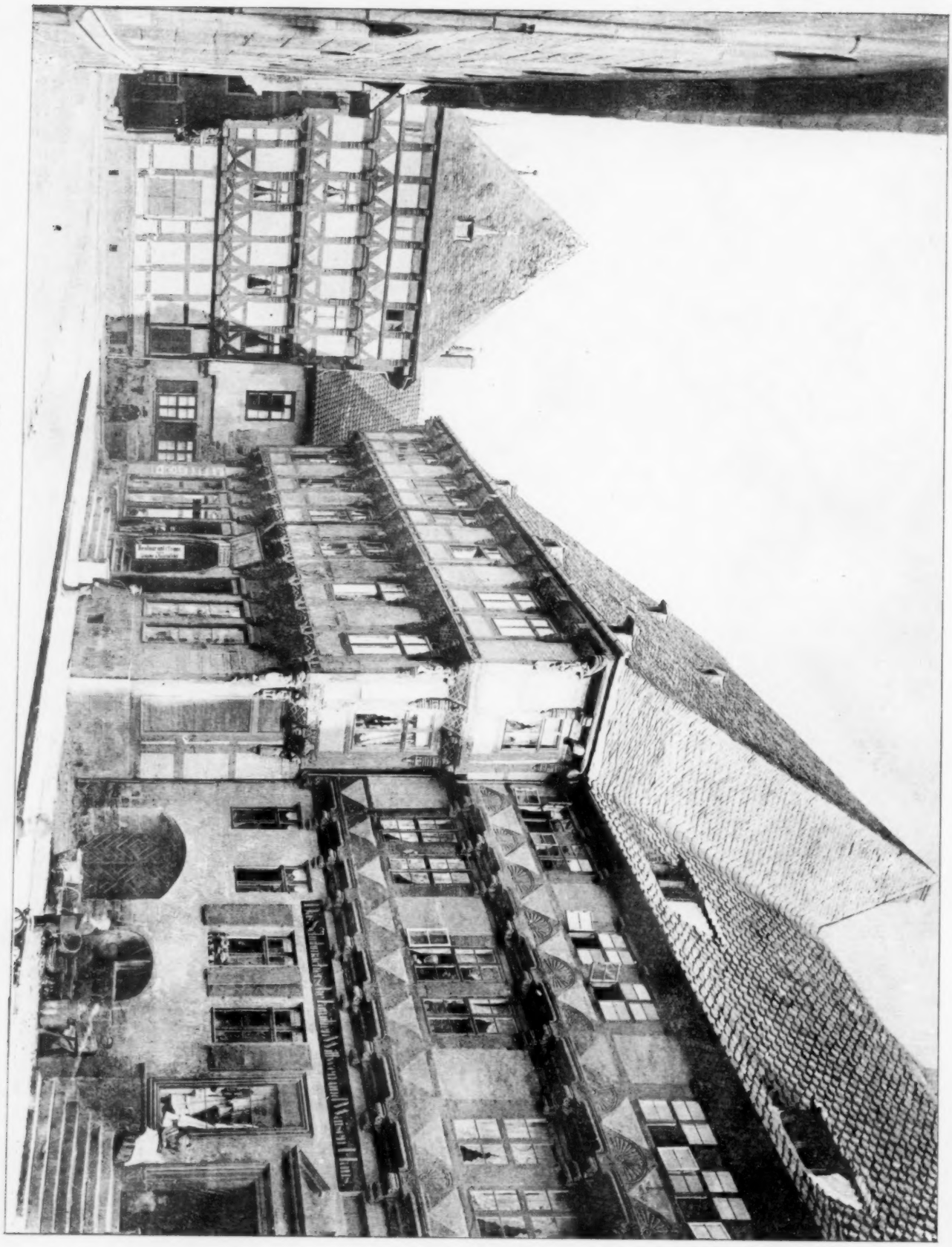

OLD HOUSES, HALBERSTADT, GERMANY. - 1884.

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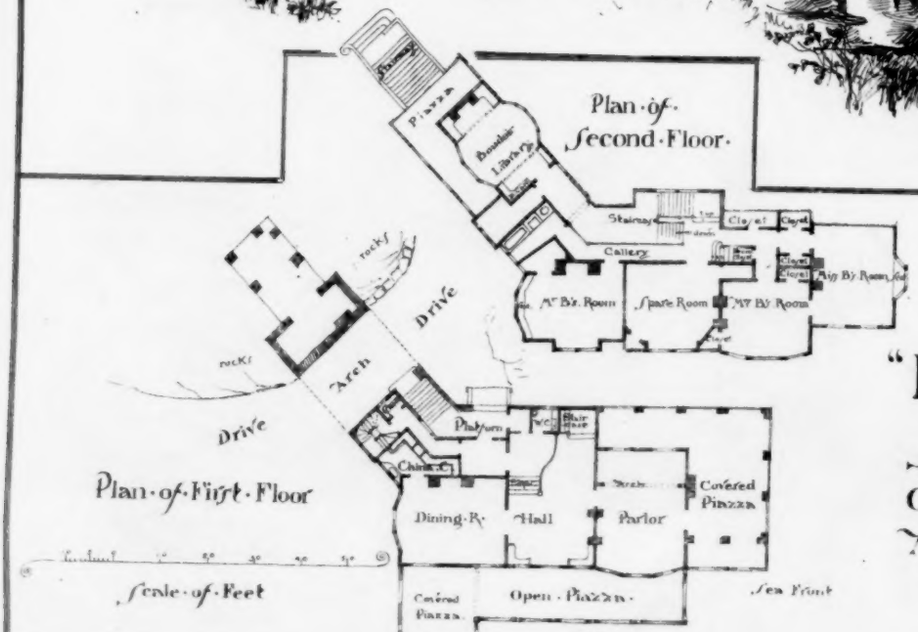
Kragsyde

Sketch of Lobster Cove

Plan of Second Floor



Plan of First Floor

Scale of Feet

Sketches
Marine
"KRAGSYDE"

Summer Residence
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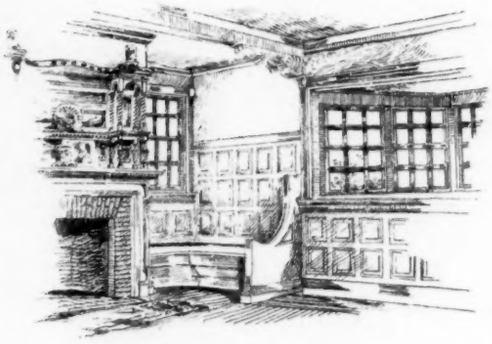
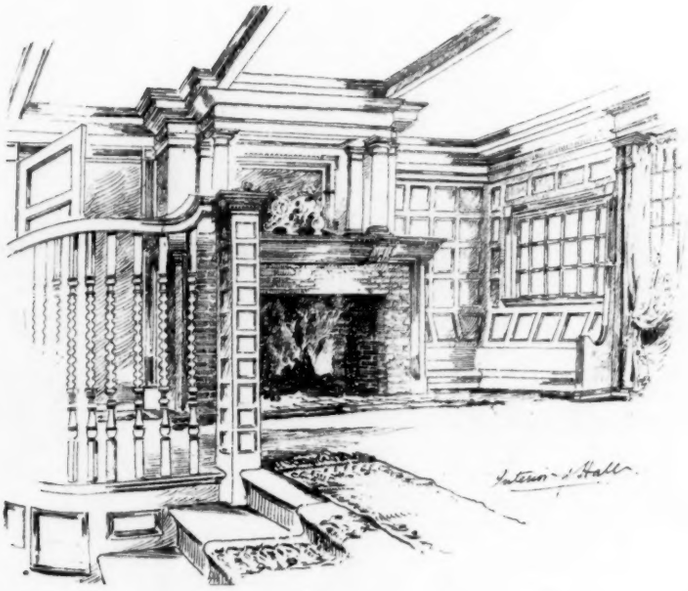


Library & Boudoir



Interior of Hall

Front & Back & Stable

From the Brae

nester by the Sea

Sketch in the Vicinity

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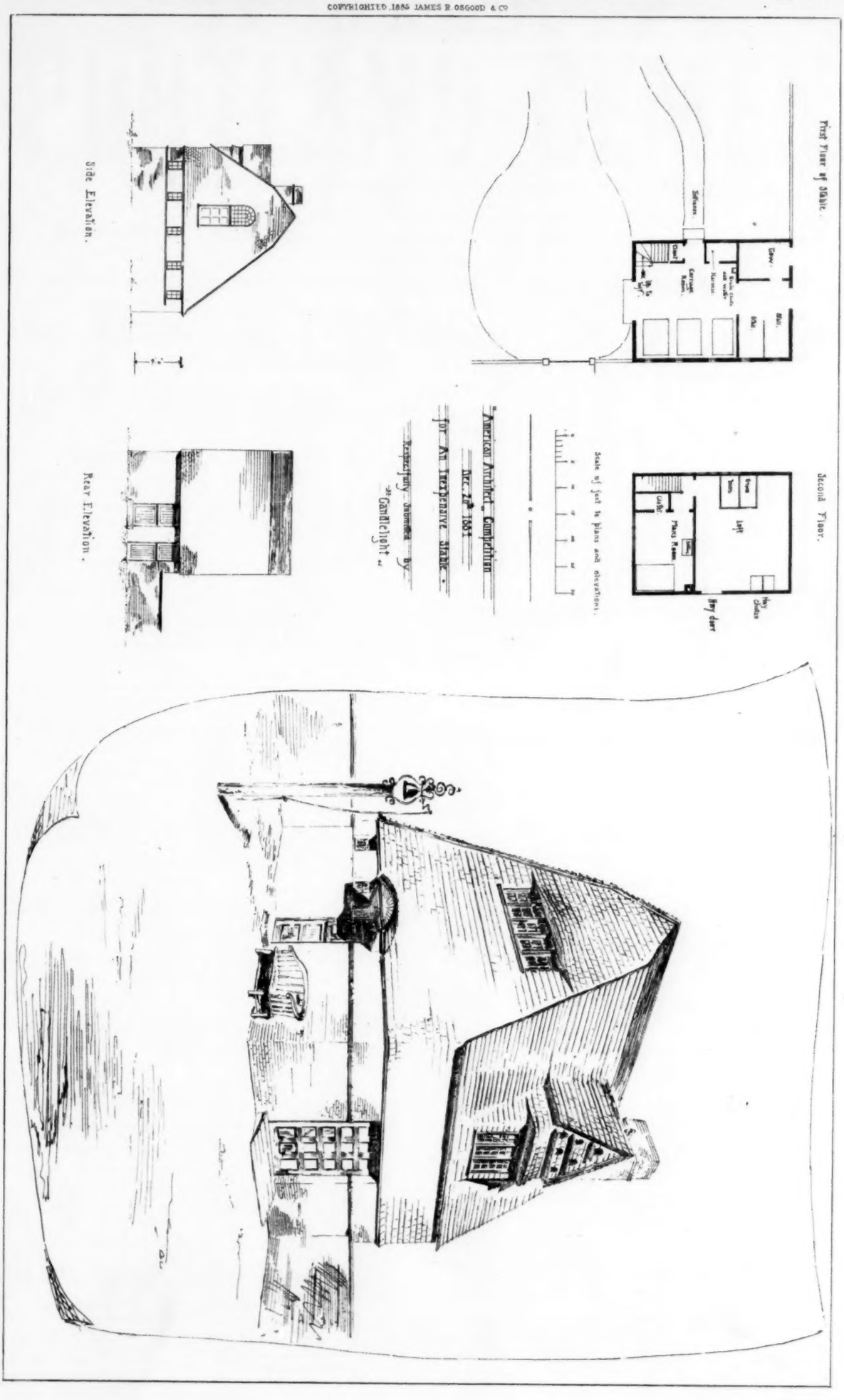

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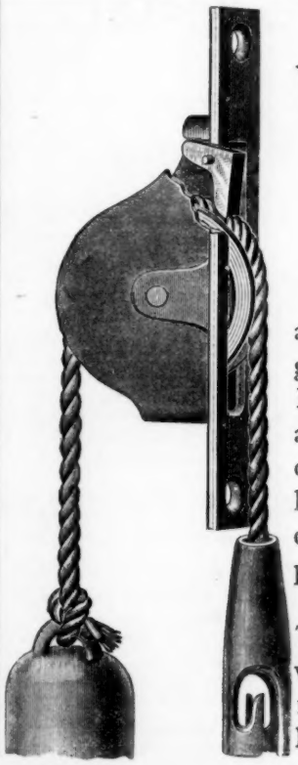

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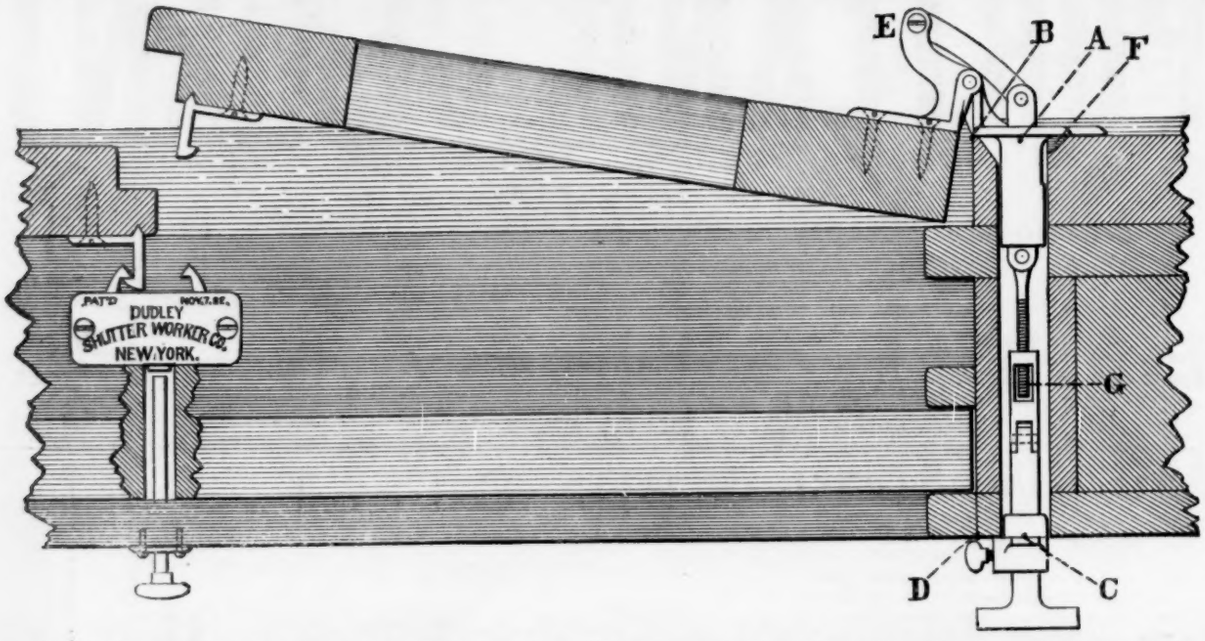

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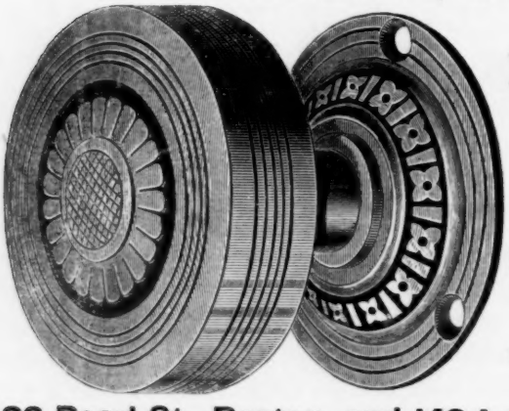

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Possessing all the qualities of the "Interior," as above, but having greater durability. Intended for outer Doors and Sashes, Vestibules, and surfaces where the exposure to the elements is constant or severe. It is an absolute preventive of dry-rot and moisture.

In addition to the above-mentioned products, and to their popular and unequalled fine carriage and railway varnishes, **MURPHY & CO.** ask attention to their superior **Fine House Varnishes**, especially adapted to interior and exterior work on public buildings, churches, office-buildings, business blocks, office, and private residences. Further information and samples for trial furnished to parties interested. These grades are manufactured solely by

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tower. The area covered by the building (counting covered porches at one-half), is 1013 square feet; and the total cost will be $1,400.

COMPETITIVE DESIGN FOR BARN SUBMITTED BY "*Candle-Light.*"

FOUNDATION and first story of brick; second story of frame; sides and roof, common sawed shingles. No exterior painting, excepting frames, sash and doors. First floor, two-inch plank. Cow-stall with earth floor. The perspective sketch shows the detail as much as is necessary, all being of the simplest character. Your competitor has received an estimate from a reliable builder of New York, agreeing to erect this stable, as shown, for the sum of $1,365.00.

THE HOLLIS STREET CHURCH, BOSTON, MASS.

AT the present moment this building is being torn down that it may give place for a theatre, and thus shares the fate of so many churches in Boston, which within a few years have given way before the outstretching hands of Mammon: the church on Church Green, Brattle Street Church, buildings of venerable age and associations deserted by their congregations, have made way for warehouses, while churches known by their names have been erected elsewhere. Other churches of a less age have also been deserted, and either remodelled into stores or demolished. And now this church, one of the three remaining churches which are to Boston what Wren's churches are to London, is in the hands of the wreckers. We had always supposed that the building was designed by Charles Bulfinch, and are consequently surprised to find that the best authorities say the architect's name is not known. Bulfinch's church stood on the same site as this, but in 1811, when this church was begun, it was moved on to a large raft, and towed down to Bridgewater, where we believe it still stands. The architectural merit of this building is confined entirely to the tower and spire, which is exceedingly graceful, and to some excellent wood-work in the interior, of which we believe a partial use has been made in the society's new building.

STREET FRONTS, HALBERSTADT, GERMANY.

"KRAGSYDE," THE HOUSE OF G. NIXON BLACK, ESQ., MANCHESTER-BY-THE-SEA, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page* 86, *No.* 478.]

DIRECTIONS FOR TREE-PLANTING.

FIRST, see that the roots of the tree or shrub which you are about to plant are in proper condition. It should be provided with a sufficiency of small, fibrous roots, for it is from the spongioles at the extremities of these that the plant derives its nourishment. Trees vary in the form of their roots, from the dense mass of tangled fibres close to the crown, which makes the Rhododendron so safe to transplant, to the long, coarse, thick tap-root, which renders transplantation a dangerous process with some trees unless removed young. But these tap-roots emit from various parts tufts of fibres, and it is on these being uninjured and in sufficient quantity that the success of the planting will depend.

2. It is evident, then, that should it be found necessary to prune the root, the knife should be applied to the big coarse taps, but not to the fine, hair-like rootlets, all of which should be carefully preserved.

3. Let the hole dug to receive the plant be rather larger than required by the roots when spread out.

4. If possible dig the holes which are to receive the plant some days or weeks before the planting takes place, so as to leave the interior of the hole exposed meanwhile to the fertilizing influences of the atmosphere, rain, etc.

5. Rainy, or at least damp, cloudy weather is by far the best time for planting. Avoid as much as possible planting during sunshine or frost, or a run of dry weather.

6. If, for any reason, you are unable to plant your trees and shrubs for some time after receiving them from the nurseries, keep them meanwhile in some cool, dark shed, with wet moss or matting flung over the roots. These must be carefully guarded from three enemies, viz., frost, drought and light. Sunshine is death to roots.

7. In planting, see that the fibrous roots are not cramped or tangled in a mass, but spread them out carefully, so that they occupy nearly the same positions they did before the plant was taken up.

8. If the tree has been reared in a pot, the roots will most likely be found coiled up spirally into a dense mass. If so, they must, before planting, be patiently unravelled, and the fragments of pottery placed for drainage extricated. In doing so, care must be taken not to injure the extremities of the rootlets, which must be placed as deftly as possible in the hole, and spread out in such positions as that, when they grow, they shall not resume the twisted form.

9. Beware of planting too deep. The tree should not be fixed in the ground lower than will bring the soil, when the hole is filled, one inch or two inches above the collar of the tree. The collar is the spot where the ascending axis (the stem) meets the descending axis (the root). Thousands of young trees perish annually from being planted too deep. In situations exposed to violent winds it may be allowable to plant a little deeper; but it is only meeting one evil by substituting another, and it would be preferable to undergo the expense and trouble of staking the young trees where it is required.

10. When the plant is placed in the hole, and the roots well spread into their natural position, half fill the hole with some fine soil, different, if possible, from that in which the hole has been dug. Then shake this soil into the interstices between the roots, by gently pulling the stem up and down just enough for the purpose, and afterwards tread the soil lightly in. You may then proceed to fill up the hole, and, when done, again tread the soil in pretty firmly before making the surface neat.

11. See that the stem, when planted, be quite perpendicular. If the tree is of such shape or size that the wind may sway it about and thus disturb the roots, it should be fixed to a firm stake till it has become settled. See that the stake is so attached that it shall not, by its contact, fray or wound the bark of the tree.

12. If the soil be very dry at the time of planting, mulching must be resorted to. That means watering abundantly, and in relays as the first watering gets absorbed, so as to make sure of saturating with water all the ground about the roots. Mere sur ace watering is a sham. You must water abundantly and repeatedly, till no doubt remains as to the water (which percolates very slowly through dry, dusty soil) having reached the lowest roots; anything short of that is useless.

13. Avoid planting on raised soil or mounds, unless in very exceptional cases, such as low, damp, swampy spots. Unless in very wet seasons, very little of the fertilizing rain reaches the roots of trees planted on mounds, as the sloping sides of the mound carry the water, as it falls, away from the roots of the tree, to be wasted in the surrounding ground. Plants thus deprived of their fair share of moisture never thrive well, and in dry summers often die. If you take up a tree thus circumstanced, you will find the ground about its roots quite dry and parched.

14. On the contrary it is a good practice to scoop a kind of shallow basin round young newly-planted trees, by slightly elevating the soil at a little distance round the stem, thus inclining it inwards towards the plant. In this way the rain, as it falls, is directed towards, instead of being conducted away from, the roots.

15. In planting raised banks for hedges or screens, bear in mind the above, and let the top of the ridge, on which the plants are set, be hollowed a little, so as to incline the water-shed towards the roots.

16. When a tree is planted on a lawn or any other grassy site, do not let the herbage come close up to its stem, but cut away a circle of the turf of larger or smaller diameter, according to the size of the tree. As a rule (of course with exceptions), the roots of a tree extend as far as the extremities of its horizontal branches, and that should be (until a tree has grown large) the measure of the circle that is to be bared of turf and left open to the beneficial influences of the air, rain and sun.

17. With trees planted in unturfed soil, similar care is to be taken not to allow rank and tall weeds to grow within a certain radius of the stem. Many a young plantation has been ruined by the encroachment of luxuriant weeds, which monopolize the nutriment of the soil, prevent the access of rain and sunlight, and choke the foliage of the lower branches of the trees.

18. As a rule, trees, especially Conifers, dislike coarse manure about their roots; but decayed turves, rotten leaf-mould, and indeed any mixed refuse or rubbish, especially if of a different nature from the soil in which the plantation is made, form composts which wonderfully stimulate the growth of newly-planted trees.

19. If a plantation be made in stony soil, do not remove the stones. To many trees they are rather beneficial than otherwise, and to very few do they seem detrimental. Experiment has proved that the removal of stones from stony land impairs its fertility to a remarkable degree, at least for some years.

20. In the purchase of grafted or budded trees, see that the union between the graft or bud and the stock be properly effected. Sometimes (and this chiefly occurs amongst Continental growers) a slim graft is embedded on a thick bludgeon of a stock out of all proportion to it. Sometimes it is a vigorously-shooting species that is wedded to a slow-growing stock which cannot furnish the quantity of sap required. In both cases failure sooner or later is the result. In budded plants it is the stock that is generally the most delicate part. Unless it is healthy and well stored with sap, the bud, however vigorous at first, will gradually decay.

21. For choice and delicate trees and shrubs, and generally for such as are liable to injury from the cold of our climate, do not select the lowest and most sheltered spots to plant them in; in valleys and enclosures they suffer more from frosts than in more elevated and open situations. The protection required by plants that are impressible to our climatic conditions is rather the screening them from the

bitterness of our north-east winds in spring than the shutting them out from healthy summer breezes. In closely-secluded nooks and dales such plants are stimulated into early growth in spring and late growth in autumn, and in both cases the tender, sappy shoots are unable to resist frost. In more open and exposed situations the growth is shorter, but the wood of the shoots is better ripened.

22. In peaty soils there generally exists between the surface-peat and the subsoil (whether sand or gravel) a stratum, from one inch to six inches thick, of a hard, gritty substance, impermeable to water, which is locally denominated "rust" or "pan." Until this "rust" or "pan" be quite broken through by the process of trenching (for which a pickaxe is generally indispensable), it is in vain to plant in such soil, as it will nourish nothing but the indigenous heaths and Scotch fir. But once trenched and the "rust" broken through, the land becomes very fertile and peculiarly well adapted to the growth of trees and shrubs of all kinds.

23. Plants reared in peaty or similar light soils bear transplantation better than those grown in heavy lands. The reason is, that in light and porous soils the roots are mostly globed into fibrous tufts near the stem, whereas in strong land the roots of plants wander farther away in search of moisture, etc., and through a denser medium, so that they become elongated and coarse. All tap-rooted plants, whether the tap-root be congenital or superinduced by the nature of the soil, should be transplanted while young; otherwise they have little chance of surviving the process. Hence it is that young plants growing spontaneously in woods, whether self-own young trees or suckers sent up by older ones, and generally saplings undisciplined by nursery cultivation, scarcely ever survive transplantation. Plants with fibrous roots are generally taken up with "balls," that is with more or less of soil clinging to the dense trusses of roots, and in that state transplantation is a safe and easy process. Of this rhododendrons afford a striking instance, as, when taken up with good "balls," they can be moved with impunity at almost any season of the year.

24. Trees and shrubs intended for transplantation should not be left more than two years without being moved or (which in most cases is equivalent) "spaded." This last process consists in passing a spade (or other tool peculiarly constructed for the purpose) round and under the tree, so as to cut off the tap-root (if any) and to confine the lateral roots within a certain given space. This work should be done in the early autumn, so that there may be time for fresh rootlets to be pushed forth inside the ball, to replace those which were cut off outside of it. A plant so treated will hardly ever fail of successful transplantation, as it is isolated from the surrounding soil, and, when transplanted, will extend its roots in its new locality without sensibly feeling the difference.

25. The safe removal of large trees is ensured by a process identical in principle with the above, but on a proportionately larger scale. A trench is dug round the tree, one season before its intended removal, at such a distance from the main trunk as may be considered sufficient to leave roots enough attached to the tree to feed it when removed to its new position. This trench cuts off all the roots extending beyond its inner circumference. The spade or other special tool is then pushed successively from all parts of the trench as far under the roots of the tree as possible, so as to intersect the "tap," if any. The trench is then filled in, and the tree proceeds during that season to develop fresh rootlets within and around the "ball" left inside the trench. By the ensuing season this ball will contain within itself all the roots necessary to the life and growth of the plant. Then, by proper machinery of a simple nature, both the tree and its ball of roots, with plenty of soil adhering to them, can be lifted up and safely removed to the new site which the tree is intended to occupy.

26. Transplanting may be performed at any time from October to April, according to the nature of the season. But the universal canon to be observed is to plant as much as possible during wet or cloudy weather, and to refrain in sunshine, drought or frost. Such intervals of forced inaction may be profitably employed in settling the spot where each tree is to be placed, in digging the holes and in providing the compost to be put round the roots when the planting is performed.

27. The sooner after the receipt of the trees from the nurseries they are finally planted the better; but if there must be some delay in planting them, it is better to keep them in a dark shed, as before directed, than to "lay them in by the heels," as placing them hurriedly and temporarily into the ground is technically called.

28. In moving trees of any size it is advantageous to place them, when replanted, in the same position with respect to the cardinal points, as they occupied before being moved. In other words, it is best that the same side of the trees should face the west, for instance, as faced the west before removal.

29. Do not unduly cut up your grassy expanses by dotting too many single specimens, or, worse still, too many flower-beds or small clumps over its surface. What single specimens you do plant should be of the very finest or rarest species. If Conifers, they should feather to the ground; if deciduous trees, they should be of such species as that, when the branches are allowed to ramify five feet to six feet high on the trunk, they should dip to the ground, as in the tulip tree, catalpa, horse-chestnut, and many other trees. Amongst them may also be interspersed a few pendulous trees, which, when not too numerous, add a peculiar grace to the scene.—*Heatherside Manual.*

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page* 86, *No.* 478.]

THE *AMERICAN ARCHITECT* STABLE COMPETITION.—III.

THE JURY'S AWARD.

NICHE, IN BARCELONA, SPAIN.

"*Much in Little Space.*"—The plan has several weak points. A cow-stall opening from a harness-room is neither convenient nor good for the harnesses. The harness-room is not conveniently near the stable-room. The fireplace in the man's-room necessitating an expensive exterior chimney is a luxury. There are too many motives on the exterior. The rough-cast plaster could be omitted. The mass is good, especially the roof; but the hood over hay-door, outside chimney, man's-room window and hood over man's-room door are not well arranged in regard to each other. The rendering is good throughout.

"*Hay-seed.*"—The plan is good. There is but little room for hay in the loft. The cow-stall should be separate. The detail is simple and good. The exterior mass is uneven. There is too much mass over the man's-room to balance well with the other end of the building; it would have been better to carry out the loft over the carriage-room with a gable instead of hipping it back, and by this means more hay-room could also be gained. Rendering is good.

"*Frizzle.*"—The carriage-room door should be shifted to the left, to allow a carriage to enter while others are in the carriage-room. On the exterior the gable over man's-room with long and short rake would have been better reversed, with the long rake sweeping away from the central mass of the stable: otherwise the mass is simple and good. The rendering is clear, but a little scratchy.

"*Pitchfork.*"—The harness-room is inconvenient. The cow-stall should be separate. The proportions of the two pitches to the gambrels is not quite right. This design occupies in merit one of first places after the prize designs, but was unfortunately overlooked when the first criticisms were written. The rear elevation is particularly good. The rendering is excellent.

"*Pen.*"—The entrance to stall-room from carriage-room is inconvenient, and the carriage space will hardly allow a carriage to be driven in; otherwise the plan is good. The exterior mass is simple and good. The scroll-work about the windows is unnecessary. The ventilator is too thin, too high and poorly designed. All the curved surfaces in the building are exaggerated. The rendering is fairly good.

"*Festina lente II.*"—Plan is good. Harness-closet inconvenient. Mass good: it would have been better to gable over the hay-door, the curve over the hay-door is too high to be agreeable. Carriage-room windows unnecessarily large. Ventilator needs more projection of eaves. Rendering scratchy, too many short lines, not enough long ones.

"*Wild Oats.*"—Plan good. Mass of elevation good, but expensive. Ventilator too high. Details simple. Rendering hard and dry.

"*At the Eleventh Hour.*"—Harness-room needs door to stable-room. Fireplaces unnecessary. Exterior effective and picturesque, looks more like a cottage than a stable; very expensive. Whole design shows hurry, as the motto seems to indicate.

"*Beginner.*"—Plan good throughout. Exterior simple and good. Eaves should be stronger. Hay-door too large. Carriage-room windows too high. Drawing shows the work of a "beginner," and is uncertain, but intelligent.

"*Mars.*"—Plan expensive, with much waste room. West elevation uneasy; it would have been better for the mass of the building to have omitted the angle cut off from the man's-room, and finished above with gable. Rendering too black, *i. e.*, too much shaded.

"*Tom.*"—Plan has waste room. Harness-room should have a door into carriage-room. Man's-room too large; fireplace a luxury. Stone chimney, *tourelle*, etc., expensive. Exterior picturesque, but uneasy. Rendering vigorous and good.

"*Martin Chuzzlewit.*"—Plan good. Harness-room inconvenient. No hay-chutes to stall; horses to be fed from large hay-chute in stable-room, which would be inconvenient. The exterior would have been excellent if the ventilating tower had been omitted, the projecting hay door gable made symmetrical, and a ventilator of good design placed

over main ridge. The present ventilator expensive, and is not agreeable in design. Details are good, as is also the rendering.

"*Old Apple Tree.*" — Harness-room much too large; otherwise the plan is good. On exterior, the man's-room cuts the roof up badly. General mass of design is good. Details are carefully studied and good. Rendering good.

"*Youngster*," "*Light Weight*" *and* "*Nyphite*" send in designs rendered in the same style, and of the same type of details. In the matter of detail the strong projection at the eaves producing heavy shadow is effective. All the lighter work such as porch, posts, brackets, etc., are too light and thin. The mock open-timber work in the gables isn't worth doing. The rendering is too much "all-over," the constructional lines are constantly sacrificed to the delineation of petty details, joints of shingles, etc., and these in their turn are done in a spotty manner. The foliage is especially scratchy.

"*Youngster.*" — First story of stone makes building too expensive. Plan a good one. Eaves thin. Ventilator too small and thin.

"*Light Weight.*" — Carriage-house too narrow. Harness-closet needs light and air. Carriage-room windows too large. Stone first story too expensive.

"*Nyphite.*" — Entrance to carriage-room should be carried to left to allow carriage to enter. Cow-stall should be separate. Details studied carefully in construction, but need study in mouldings. A battened wall always is disagreeably cheap in appearance.

"*Far Niente.*" — Plan good; stalls well arranged. Harness-case small. Staircase inconvenient. Exterior, mass good. Dormer to left, unsymmetrical. Battered wall is not agreeable. Details thin; turned work in gable unnecessary; rendering hurried.

"*Check-Rein.*" — Plan very good. Exterior has same fault as those of "*Tom Pinch, II*" and "*Martin Chuzzlewit* in regard to the ventilator and gable. Details simple; rendering labored.

"*Spinabout.*" — Carriage-room will not allow carriages to drive in. Harness-room too small. General mass good. Gable needs study in proportion. Rendering needs study; is dry and hard.

"*Sunflower.*" — Plan good. Exterior more picturesque than quiet; could, however, by studying the proportions of the parts, be made into a very good stable. Detail about hay-door, especially the brackets, unnecessary and lacking refinement. Rendering hurried.

"*Convenience and Beauty.*" — Waste room in plan and in hay-loft. No necessity for two rooms for stableman. Extra work about hay-door on exterior is not only in the way, but is not good in design. General mass is too high, but good. Windows are all too high for their width. Detail is very amateurish and poor. Rendering is labored, especially on the accessories, which are badly drawn.

"*R. K. Teck.*" — Plan good. Cow-stall should be separate. Exterior overhang above shed seems to need supporting post. Ventilator much too high and thin; otherwise general mass is good. Rendering hurried and sketchy.

"*Soyons veridique.*" — Man's room opening from harness-room is inconvenient; otherwise plan is good. Exterior is simple but commonplace. Chimney is not good. Rendering dry and hard.

"*Boy Harry.*" — Plan is inconvenient. Exterior eaves would have been better carried around without break. Mass simple. Ventilator should be over main ridge for effect. Rendering labored.

"*Age quod agis.*"—Harness-room large. Cow-stall should be separate. Plan otherwise good. Front elevation good. Brackets need to be larger. Ventilator of bad design. Window breaking through strongly projecting eaves is never agreeable. Rendering scratchy.

"*Cabby.*" — Carriage-house will not allow carriage to drive in. Harness-room convenient. Cow-stall should be separate. Exterior very restless and uneasy. Ventilator very unhappy in design. Rendering fairly good; a little spotty.

For the Jury, C. H. WALKER.

[***Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page 86, No. 478.***]

THE STABLE COMPETITION.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — As one of the competitors permit me to offer a few reflections. The interesting nature of this friendly competition and the little labor required to prepare the drawings, coming as it did during the dull season, led two of my friends to join with me in a wager as to our own efforts. When you editorily announced soon after the drawings were received that the number of competitors was large, and that seemingly one-half the designs had equal merit, there was a feeling among our trio (B. H. and W.) that the result was in doubt. I felt very confident, however, that B. would take a prize, and put myself on record to the effect that if there were two more worthy designs than his, I would like to see them. Well, the prizes are announced, and I fail to find two better than B.'s, from any point of view, my conclusions in this being re-inforced by the judgment of several competent critics. In regard to cost the three prize designs are all far beyond what $1,500 would give in the vicinity of New York. B.'s design has an area of about 700 square feet. The prize designs vary from 860 to 1000 square feet. In a case of this kind area is a fair test of relative cost. I would suggest in future competitions that the cost be assessed by an impartial contractor as if for execution near Boston. As it is now, it is very easy for any one to get an obliging builder to attach his name to an absurd price? Besides this, it costs less, I am told to build in Boston than New York. It is manifestly unfair then, where there is so small an amount to expend, that the cheaper rates of building of one section over another should play any part at all. Aside from the expense question, something might be said of the designs, which were greeted with profound astonishment by "we uns." The feelings of the jury, however, must be respected, and I am yours, etc., W.

[WE imagine that the "profound astonishment" of B. H. and W., is shared by just about one-hundred-and-one other unsuccessful competitors, and that the ratio between the satisfied and the dissatisfied would have been exactly the same however this competition might have been decided. Our correspondent's point about the comparative cost of the buildings is well taken: it would obviously be fairer to have one builder estimate on all the plans. But think of the cost of paying for one hundred and seven estimates! and who would pay for them? The competitors? — EDS. AMERICAN ARCHITECT.]

[***Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page 86, No. 478.***]

TIMBER AND METAL ROOFS.

NEW YORK, February 21, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Please inform me through your journal where I will be likely to find a work on timber and metal roofs, illustrated, with details, and oblige Yours respectfully, D.

["*Iron Roofs*," by Francis Campin, C. E., with wood-cuts and plates of roofs lately executed; Peter Barlow's "*Appendix*" to "*Tredgold's Elementary Principles of Carpentry*," containing specimens of ancient and modern roofs, 64 plates and numerous wood-cuts; Emy's "*Traité de la Charpenterie*." — EDS. AMERICAN ARCHITECT.]

[***Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page 86, No. 478.***]

A HINGE FOR A HEAVY DOOR.

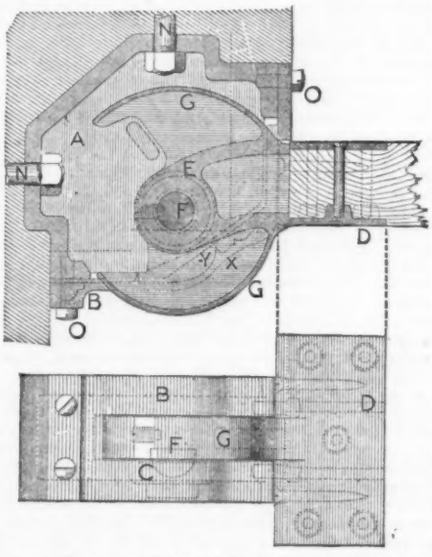
STAMFORD, CONN., February 9, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Some months ago we were asked by Messrs. Peabody & Stearns, the architects of the new Turner Building, St. Louis, Mo., to submit a design for a special hinge for carrying the very large and heavy front doors of the building, with the requirement that the hinge should transfer the door bodily from the closed position into another position at an angle of ninety degrees, the axis of rotation being found at a point four inches outside of the edge of the door, and within the thickness of the jamb.

The problem was an unusual one, and was complicated by the further fact that each door was double (*i. e.*, folded on itself), and of very large size, so that the weight on the hinges was, we believe, over half a ton, and the outward strain due to the overhanging of the door still greater.

The wall-box A is of cast-iron, and was firmly secured in place by the two anchor bolts N, N, as shown. Its top, bottom and rear wall form one casting, the front being open. A bronze cap B closes and covers the front of the wall-box, and is secured to it by the bolts, O, O. The contour of this cap is shown by the dotted line X, while that of the stone jamb is shown by the line Y. The cap thus projects slightly, and serves as a stop by which the moulding of the jamb is interrupted for the hinge. The wall-box, A, contains a bronze step or button, C, inserted at the axial point, the upper surface of which contains a spherical cavity.



The hinge D is fitted and secured to the door in the usual manner by five machine-screws which pass through a cap-plate on the back, and are tapped into the front leaf of the hinge, and also by two wood-screws inserted in the edge of the door. The hinge D, carries a projecting arm, E, cast in one piece with it, which extends into the centre of the wall-box, and carries a steel pin or trunnion, F, the spherical end of which rests in the bronze step referred to, and forms the pivot on which the hinge turns. Cast in one piece with

the hinge is also the cylindrical guard G, the two wings of which project on either side of it, and serve to fill the gap or slot in the cap B, so that the latter is always closed, whatever position the door may stand in.

Each door has three of these hinges. The wall-boxes being in position and the hinges properly attached to the door, the caps B are slipped over the arms E of each hinge, and the door then put in position, the gap in the wall-box being sufficiently high to admit the arm, E, with its projecting trunnion, F, so that the latter can be passed over the bronze step C, and seated in the latter. When this is done the several caps B are then pushed into proper position, and secured in place by the bolts O.

The whole of the work, excepting the wall-box, was made of the best gun-metal or bronze, and highly finished, so that the appearance of the hinges when completed was very rich and ornamental. They have proved very satisfactory in use, and we learn that, notwithstanding the great weight of the doors, they swing as easily and lightly as an ordinary house-door. Yours truly,

Schuyler Merritt,
General Manager Yale & Towne M'f'g Co.

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page* 86, *No.* 478.]

OUR INITIAL CUTS.

Pittsburgh, Pa., February 28, 1885.

To the Editors of the American Architect: —

Dear Sirs, — Enclosed please find several initial sketches. I have been so very much benefited by your initial cuts that I thought perhaps some one else might profit by some sketches I have which were made several years since, and shall send them on from time to time.

We out here take almost, if not quite, as much delight in initials as in plates, and I hope you will continue to publish as many good ones as you can afford. I have preserved all of mine.

Yours faithfully, W. S. F.

[We are glad to receive the sketches, and still more the foregoing letter, as it indicates that this feature of our "make up" has a value that does not exist merely in our own imaginations, as we have sometimes feared it did. If other contributors would bear in mind that the more subjects we have to choose from the better selection we can lay before them, we believe we should receive more contributions to this department of our illustrations. — Eds. American Architect.]

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page* 86, *No.* 478.]

NOTES AND CLIPPINGS.

A New Process for Color Printing. — The perfect reproduction of paintings, or even of Nature herself, in all the brightness and beauty of original color, has long been the object of inventive genius, and the rapid strides which photography has made of late have materially increased the chances of ultimate success. By means of photography we can readily reproduce all outlines and shades of objects or pictures, but a photographic print has but one color, and, therefore, necessarily often conveys a wrong impression where color predominates in the picture. An ideal way of reproducing various tints and shades would be to stop-out, by interposing colored transparent plates, all rays except those of one color, prepare a printing surface from this negative, roll this up with ink of as near the color wanted as it is possible to produce, and then proceed to the rest, printing one above the other, until by the blending thus obtained a picture like the original is produced. This, as we have said, would be an ideal method: in reality difficulties, at present insurmountable, are in the way, and therefore something less perfect but based on this line of working, must be considered satisfactory. The Universal Printing Company, of 280, High Holborn, have recently introduced a process called after its inventor, the Hoeschotype, for the photographic reproduction of colored pictures, which, as far as we can judge, seems capable of producing excellent results at a comparatively reasonable cost. The inventor has fixed at the outset upon only five colors to be used in his process, yellow, red, blue, gray, and black; these five form the base of a large key-map of tints, each one divided into five grades, containing, so to speak, respectively one, two, three, four, and five-fifths of any of these colors. In combining these tints by printing two or more above each other, a large variety of over 1600 shades are produced; the colors must of course be transparent for this purpose. To reproduce a picture, for instance a portrait, the painted original is at first photographed and copies printed. One of these copies is now taken in hand by an artist, who by means of his color scale ascertains for each spot in the picture the amount of yellow contained, and he covers that particular spot with an equivalent shade of gray, painting out with white at the same time all those parts or the photographic print which in the picture are to contain no yellow. This process finished, a negative is produced from this painted sheet, and a print taken on sensitized gelatine mounted upon plate glass. It will be understood that this gelatine print only represents a picture of those parts in which the artist wishes yellow to appear, and in different degrees of density. In other words, after this gelatine is washed, and rolled up with yellow transparent pigment, an impression can be taken from it on paper. In a similar manner gelatine printing surfaces are prepared of the rest of the colors, red, blue, gray, and finally black; they are all printed one above the other on one sheet in perfect register, and the result is a reproduction of the original colored picture, as near as the skill of the artist who prepared the copies for the colored plates, and the perfection of pigments will admit. There cannot be any doubt that tedious though this process appears, and depending as it does on the skill of an artist, the result is admirable, and we have seen excellent specimens of this work, and have moreover examined the working of the process. The glass plates carrying the gelatine film are placed upon the bed of what appears a well-built lithographic press. The ink used is very stiff, and the inking operation performed in the usual way by rollers, is repeated twice for every one impression to insure perfect distribution. The sheets are laid on to exact register, and printing by power is performed at the rate of about 100 copies per hour. The presses are capable of printing up to 25 inches by 35 inches in color, and if smaller subjects are worked two or more can be placed on one plate. Ink and paper are of course important items; in the former, shades must never vary, since otherwise the artist's tedious work would not be faithfully produced, and in the latter a certain texture and sizing are, we understand, most essential, but the finished pictures can be given any desirable texture by rolling. We have seen amongst numerous other specimens at the offices of the company in High Holborn, a reproduction of Mr. Alma Tadema's "Pandora," the picture which made him a member of the Society of Painters in Water Colors, and we were told by the secretary that so much pleased was the severe critic with the reproduction, that he gave permission for its publication. — *Engineering.*

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page* 86, *No.* 478.]

Slag Cement. — We have on various occasions referred to the ingenious and very successful processes of Mr. Frederick Ransome, for the manufacture of cement from blast-furnace slag and lime. The discovery, made about twelve years since by Mr. Charles Wood, that slag run from the blast-furnace in a melted condition falls into a fine granulated state, removed one of the main objections to its utilization: the great cost attending its reduction to powder by mechanical means. One of the materials composing the Ransome cement is thus obtained ready for use, and being practically a waste product, its cost is nominal, the expense attending its application being limited to handling. By his earlier method the other material employed, chalk or lime, was ground and mixed with the slag, the combination being then calcined and again ground; from this resulted a cement possessing very high qualities, both as regards quickness in setting and strength. Very recently, however, Mr. Ransome, following the same line of investigation, has improved greatly on his former simple process, and he has found that the spent lime from gas-works may he employed with results as good as those obtained with lime prepared specially for the purpose. In order however, to get rid of the sulphur with which the lime is saturated when it leaves the gas purifier, Mr. Ransome resorts to a very simple and efficacious device. He mixes a certain proportion of powdered coal or coke with the slag and lime, and when this is exposed to the heat of the calcining furnace, the action of the coal or coke converts the sulphate into a sulphide of lime, that is subsequently entirely got rid of by the introduction of a jet of steam, which drives off the whole of the sulphur impurities as sulphuretted hydrogen, leaving the lime quite pure. This, however, is only one of the recent improvements to which we have referred. A highly important modification is the use of a revolving retort for the calcination of the slag and lime. It is found that after the materials have been thoroughly burnt in this manner, they remain in the same fine state of subdivision as when they were placed in the retort, and on being discharged will pass through a sieve of eighty meshes to the inch. The costly process of grinding, which is unavoidable in the ordinary method of manufacture, is thus avoided, while the cement is said to lose none of its useful characteristics in this novel process. Of course this system is equally applicable where fresh lime is employed instead of the waste material from gas-works, only in such a case it is unnecessary to add the powdered coke or to apply the steam jet. We have referred in general terms to the strength of the cement produced by this method; the following table of comparative tests made with samples of Portland and Ransome cement show clearly the remarkable qualities possessed by the latter; the samples in each case were one and one-half inches square, giving a sectional area of two and one-fourth square inches: —

Age of Sample.	Portland Cement. Breaking Load.	Ransome Cement. Breaking Load.
	lb.	lb.
2 days	510	740
3 "	693	870
7 "	818	1170
12 "	...	1300
15 "	...	1330
21 "	...	1440
28 "	936	
7 years	1327	

The foregoing figures speak for themselves, and indicate clearly that the Ransome cement possesses striking advantages over Portland, especially as it reaches a strength, within a few days, which is higher than the Portland after seven years. Very important advantages are also found in the simplicity of manufacture, and the suppression of the final process of the cement manufacturer, that of grinding. The plant used is therefore simpler and involves much less expense in maintenance and labor for the production of a given quantity of cement than is required in the ordinary mode of manufacture. When in addition to this it is remembered that waste materials are employed, it will be easily understood why the slag cement can be made for half the cost of Portland, and the commercial importance of Mr. Ransome's process will be readily appreciated.—*Engineering.*

[*Please forward to the editors your vote for the best ten buildings in this country. See our invitation on page* 86, *No.* 478.]

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

312,610. WEATHER-STRIP.—Geo. W. Chinn, Bloomington, Mo.

312,616. ICE-ELEVATOR MECHANISM.—John R. Eccless, Waterford, N. Y.

312,658. SHEET-METAL ROOFING.—L. Lewis Sagendorph, Cincinnati, O.

312,669. DOOR-MORTISING MACHINE.—Frank W. Stevens, Lowell, Mass.

312,678. ATTACHMENT TO STOVES FOR HEATING AIR.—George A. Vaughan, Lockesburg, Ark.

312,683-685. FIRE-ESCAPE.—Herman Wettstein, Harvard, Ill.

312,685. WINDOW-SCREEN.—Marcellus L. Whitcomb, Muskegon, Mich.

312,687. WATER-CLOSET VALVE.—Peter White, St. Louis, Mo.

312,699. MACHINERY FOR OPENING AND CLOSING AUTOMATICALLY SAFETY-COVERS FOR ELEVATORS.—Alexander J. Blaikie, Rochester, N. Y.

312,782. ELEVATOR-HATCH.—Peter M. Wilson, New York, N. Y.

312,784. MIXED PAINT.—John B. Wood, Brooklyn, N. Y.

312,793. FIRE-ESCAPE LADDER.—Joseph Barnett, New York, N. Y.

312,819. LOCK.—Edward J. Colby, Cincinnati, O.

312,827. LOCK.—Thomas Donahue, James Roche, Willard T. Goodwin and William W. Cone, Terryville, Conn.

312,872. ATTACHMENT FOR WATER-SUPPLY COCKS.—Henry S. Lord, Hartford, Conn.

312,874. FIRE-ESCAPE.—Zacharias Ludwig, Oakland, Cal.

312,882. WATER-HAMMER PREVENTIVE.—Ferdinand L. Mentel, Cincinnati, O.

312,897. CONCRETE PAVEMENT.—Christian F. Rapp, Cincinnati, O.

312,899. FIRE-EXTINGUISHING APPARATUS.—William A. Reid, St. Louis, Mo.

312,903. VENTILATOR.—La Fayette Schanck, Rochester, N. Y.

312,908-910. FIRE-ESCAPE.—Frederick Schickle, St. Louis, Mo.

312,916-917. REVERSIBLE LATCH.—William E. Sparks, New Haven, Conn.

312,918. CHIMNEY-CAP.—Theodore J. Steen, Oakland, Neb.

312,920. REAMER.—George R. Stetson, New Bedford, Mass.

312,921. HYDRAULIC LIFT.—John S. Stevens and Charles G. Major, Battersea, County of Surrey, and Thomas W. Barber, Ulverstone, County of Lancaster, Eng.

312,926. COMBINED LOCK-LATCH AND HASP.—Hiram C. Stouffer, Cortland, O.

312,949. COMBINED SCREEN AND STORM-DOOR.—George F. Barber, De Kalb, Ill.

312,969. DOOR-HANGER.—John A. Carr, Walden, N. Y.

312,978. CHIMNEY-COWL.—Theodor Crüger, New York, N. Y.

312,979. EXTENSION-LADDER AND FIRE-ESCAPE.—John P. T. Davis, New Trenton, Ind.

313,000. TONGUING AND GROOVING MACHINE.—Frank B. Kearney, Grand Rapids, Mich.

313,024. FIRE-ESCAPE. George W. Putnam, Malden, Mass.

SUMMARY OF THE WEEK.

Baltimore.

APARTMENT-HOUSE.—Mrs. M. M. Hayes, of Boston, is to have a three-st'y and basement brick bachelor's apartment-house built on Centre St., near Charles St., to cost $10,000; from designs by J. A. & W. T. Wilson, architects.

ADDITION.—Messrs. J. A. & W. T. Wilson, architects, are preparing plans for Geo. L. Harrison, Esq., for a three-st'y brick addition, 25′ x 50′, at the cor. Eutaw Pl. and Lanvale St., to cost, $4,000.

DEPOT.—The Pennsylvania Railroad authorities are to erect a new passenger-station at Charles St. It will be three-st'y, with ornamental towers, 60′ x 200′, be of brick and Port Deposit granite, and cost $100,000.

BUILDING PERMITS.—Since our last report nine permits have been granted, the more important of which are the following:—

Mercantile Trust & Deposit Co., one-st'y and basement brick building, n e cor. German and Calvert Sts.

John Pursley, 3 three brick buildings, n s Biddie St., w of McKim St.

Chas. Caspari, Jr., three-st'y brick building, n w cor. Fremont and Baltimore Sts.

Jos. H. Rieman, three-st'y brick building, n s Biddie St., bet. Garden and Bolton Sts.

John F. Butzler, three-st'y brick building, n s Camden St., bet. Sharp and Hanover Sts.

John Mogarety, 3 three-st'y brick buildings, n s Preston St., w of Broadway.

Boston.

BUILDING PERMITS.—*Wood.—Milton St.*, near Whittemore St., mechanical building, 12′ x 213′; owner, M. M. Zent; builder, Wm. A. Zent.

Milton Ave., No. 111, dwell., 21′ x 28′; owner, M. H. Jackson; builder, M. H. Jackson.

East Fourth St., No. 6¾, carriage-house, 22′ x 36′; owner, Edward Palley; builder, Eugene Sullivan.

Milton Ave., No. 10½, dwell., 27′ x 32′; owner, M. H. Jackson; builder, M. H. Jackson.

Magazine St., No. 34, dwell., 17′ x 45′; owner, Benjamin Bean; builder, Benjamin Bean.

Magazine St., No. 36, dwell., 17′ x 45′; owner, Benjamin Bean; builder, Benjamin Bean.

Norfolk Ave., near Magazine St., dwell., 19′ 3″ x 35′; owner, P. J. Drury; builders, Potton & McLaughlin.

Norfolk Ave., near Magazine St., dwell., 19′ 3″ x 35′; owner, P. J. Drury; builders, Potton & McLaughlin.

Unnamed Pl., off Jamaica St., dwell., 21′ x 31′; owner, Michael Schanney; builder, Thomas Tobin.

Fuller St., near Capen St., dwell., 20′ x 36′; owner, Mary Carroll; builder, Neil Carroll.

Park Pl., near Myrtle St., dwell., 22′ x 32′; owner, Paul Lincoln; builder, M. D. Ayers.

Longwood Ave., No. 30, dwell., 24′ x 50′; owner, Anton Volk; builder, Gottiel Merl.

Lubec St., near Swift St., dwell., 20′ x 30′; owner, Mary J. Roby; builder, Peter McCann.

Taylor St., near Water St., storage building, 31′ x 91′; owner, A. T. Stevens Lumber Co.; builder, A. T. Stevens Lumber Co.

Dudley Ave., near Washington St., dwell., 22′ x 30′; owner, Thomas Havey; builder, Thomas Havey.

Brooklyn.

BUILDING PERMITS.—*Sumpter St.*, s s, 200′ e Saratoga Ave., three-st'y frame (brick-filled) store and tenement, tin roof; cost, $3,800; owner, George Ullrich, 887 Tenth Ave.. New York., architect and mason, Christian Baur; carpenter, Jacob Hertlin.

Wallabout St., No. 286, n s, near Marcy Ave., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,000; owner, Chr. Reichert, 284 Wallabout St.; architect, H. Vollweiler.

Putnam Ave., s s, 90′ e Tompkins Ave., 3 three-st'y brown-stone dwells., tin roof; cost, each, $6,500; owner and carpenter, Chas. Isbill, 593 Herkimer St.

Hancock St., n s, 30′ e Bedford Ave., three-st'y brown-stone dwell., tin roof; cost, $7,000; owner and builder, S. E. C. Russell, Hancock St., near Bedford Ave.; architect, I. D. Reynolds.

Central Ave., s e cor. Himrod St., three-st'y frame (brick-filled store and tenement, tin roof; cost, $5,000; owner and architect, Jacob Essig, 92 Stanhope St.; builders, Wm. Maske and J. Rueger.

Graham Ave., No. 437, w s, 25′ n Frost St., three-st'y frame (brick-filled) store and tenement, tin roof; cost, $3,000; owner, Julia Grice, 437 Graham Ave.; architects and carpenters, Sammis & Bedford; masons, Doyle & Brazill.

Thirty-second St., n e cor. Third Ave., three-st'y frame store and tenement, tin roof; cost, $4,000; owner, John Morrison, 283 Twenty-second St.; architect, Francis Ryan; builder, Daniel Ryan.

South First St., s s, 100′ w Third St., three-st'y brick tenement, tin roof; cost, $4,000; owner, Wm. Baker, 128 South Fifth St.; architect, E. F. Gaylor; builders, Wm. L. Langridge and Marinus & Gili.

Bedford Ave., n e cor. Hancock St., four-st'y brick store and flat, tin roof; cost, $14,000; owner and builder, S. E. C. Russell, Hancock St., near Bedford Ave.; architect, I. D. Reynolds.

Washington Ave., w s, 150′ n Park Ave., 2 three-st'y brick stables and feed stores, felt and gravel roofs; cost, $11,000; owners, Haviland & Shotwell, 16 Fulton St.; architect and builder, Eli Osborn.

Chicago.

BUILDING PERMITS.—J. & J. F. Gubbins, two-st'y store and dwell., 180 Colorado Ave.; cost, $3,000; architect, C. Palmer.

S. E. Gross & Co., 12 cottages, 1309-1331 Monroe St.; cost, $30,000; architect, L. H. Hallberg.

J. Biehl, two-st'y dwell., 678 West Superior St.; cost, $3,000.

S. E. Gross & Co., 13 cottages, 409-437 Gross Park Ave.; cost, $18,200; builder, S. E. Gross.

S. E. Gross, 13 cottages, 410-438 Gross Park Ave.; cost, $18,200.

H. G. Peters, 2 two-st'y flats, 501-503 Hermitage Ave.; cost, $7,000, architect, H. Bessler.

V. Harboro, four-st'y store and flats, 545 West Madison St.; cost, $12,000; architects, Wm. Strippelman & Co.; builder, J. Comen.

Mrs. E. Smith, five-st'y factory, 28-30 Desplaines St.; cost, $12,000; architect, J. M. Van Osdel.

Geo. Wilson, two-st'y dwells., 290-292 Belden Ave.; cost, $10,000; architect, J. Otto; builder, C. Lind.

Miss C. T. Kerrgan, two-st'y flats, 305 Loomis St.; cost, $3,700.

F. Sammis, two-st'y dwell., 327½-329 Twenty-fourth St.; cost, $4,500; architect, C. O. Hansen.

J. Schrever, two-st'y flats, 124 Nineteenth St., cost, $3,200; architects, Furst & Rudolph.

Cincinnati.

CINCINNATI'S IDLE WORKMEN.—A careful estimate of the number of the unemployed men in this city in the skilled trades gives a total of 16,700. The figures are those of the different workingmen's organizations and of the Board of Trade and Associated Charities.

Among the workers in iron, one-fourth of the men are idle; in the building trades one-third of the men usually employed are idle; and in carriage and furniture factories nearly one-half are idle. Not included in this estimate are nearly 2,000 cigar-makers and upward of 4,000 tailors and poor women who sew on tailors' goods and clothing at their homes.

Of common laborers there are, of course, a large number out of work, and if all these and the members of trades not requiring much skill were included, it is estimated that the total number of men out of employment would reach 30,000.—*New York Times.*

MASONIC TEMPLE.—The Ohio Consistory of Scottish Rite Masons have begun a subscription to raise a sum sufficient to restore the temple in this city.

BUILDING PERMITS.—Repair Masonic Temple; cost, $40,000.

J. Magly, two-st'y brick dwell., Mt. Auburn; cost, $3,000.

J. Hovekamp, three-and-one-half-st'y brick dwell., cor. Clinton and Baymiller Sts.

Itto Kramer, two-st'y brick dwell., cor. Euclid and Moliter Ave.; cost, $6,000.

F. Ewald, three-st'y brick dwell., cor. Richmond and Fillmore Sts.; cost, $6,000.

Jno. Baconhoff, three-st'y brick dwell., cor. Stone and Brum Sts.; cost, $5,000.

B. F. Mayburgh, three-st'y brick dwell., 142 Cutter St.; cost, $3,000.

Herwig, two-st'y brick dwell., 256 Betts St.; cost, $6,000.

Jno. Rendigs, two-st'y brick dwell., cor. Highland and Moliter Sts.; cost, $5,000.

J. Hoeffer, four-st'y brick dwell., cor. Liberty and Mansfield Sts.; cost, $5,000.

H. Wuest, four-st'y brick dwell.; cor. Race and Canal Sts.; cost, $7,000.

E. F. W. Frauzmier, three-st'y brick dwell., McMillan St.; cost, $2,500.

Wm. Dometto, three-st'y brick dwell., Court St.; cost, $3,700.

Josephine Sauer, four-st'y brick dwell., cor. Oak and McMiken Sts.; cost, $9,000.

M. Wiegand, three-st'y brick dwell., cor. Jackson and Twelfth Sts.; cost, $3,200.

Henry Elstro, four-st'y brick dwell., 151 Woodward St.; cost, $4,200.

Benj. Hey, two-st'y brick dwell., Broadway; cost, $6,000.

Repairs, $6,625.

Total cost to date, $121,225.

Total permits to date, 31.

New York.

BANK-BUILDING.—The Emigrant Industrial Savings Bank owns the house and lot No. 51 Chambers St. The old buildings will be torn down and on the site will be erected a substantial fire-proof building occupying the entire area of the two lots, 48′ feet wide, and 150′ deep, fronting on both Chambers and Reade Sts. The edifice will probably be of granite, and will cost about $350,000.

HOUSES.—On the s e cor. of Seventy-fourth and Seventy-fifth Sts. and West End Ave., 24 three-st'y and basement brown-stone and terra-cotta trimmed dwells., with 18′ to 20′ frontages, are to be built from designs of Messrs. Lamb & Rich.

INSTITUTIONS.—On the e s of Madison Ave., between Eighty-First and Eighty-second St., buildings for the House of Mercy are to be built from plans of L. J. O'Connor, at a cost of $120,000. It will have a frontage of 185′ on Madison Ave. and 50′ on the streets.

For the Methodist Episcopal Church House of the Aged and Infirm, a building is to be erected on the e s of Tenth Ave., covering the block from Ninety-second to Ninety-third St. It is to be of brick with stone finish, four-st'y, and will be from designs of Messrs. D. & J. Jardine.

For the House of the Good Shepherd, a four-st'y brick, stone and terra-cotta building, to cost $30,000, is to be built on the s e cor. of Ninetieth St. and Avenue A; from plans of Mr. Laurence J. O'Connor.

MUNICIPAL BUILDING.—Acting under the suggestion of Recorder Smyth, the Grand Jury this week, before being discharged for the term, handed in a presentment setting forth the necessity for providing better accommodations for the various city departments, and recommending that the Legislature authorize the Commissioners of the Sinking Fund to select a site in the City-Hall Park, upon which to erect a building or buildings for municipal purposes. The City-Hall and New Court-House, however, must not be removed to make space for the proposed building. The Grand Jury in their presentment go over the same grounds as those touched upon by the Grand Jury of the May term in 1882, regarding the unsafe condition of the Hall of Records, and the necessity for more room for other departments.

PARISH SCHOOL-HOUSE.—A new school is to be built in Grove St.; bet. Bedford and Bleecker Sts., by the Catholic parish of St. Joseph. It will cover a lot 82′ 7″ in width, and 104′ in depth, and will be four-st'y in height. The material to be used is brick, stone and terra-cotta.

BUILDING PERMITS.—*Canal St., No.* 272, four-st'y and basement brick store, tin roof; cost, $8,000; owners, D. & W. Heidgerd, 274 and 276 Canal St.; architect, Jno. B. Snook; builder, not contracted for.

One Hundred and Twenty-seventh St., s s, 184′ w Third Ave., five-st'y brick and brown-stone apartment-house, tin roof; cost, $23,000; owner, Thos. W. Beacom; architect, C. Baxter.

East Eleventh St., Nos. 626-630, 3 five-st'y brick tenements, tin roofs; total cost, $48,000; owner, Fred. Heerlein, 952 Second Ave.; architect, J. Kastner.

West Thirty-eighth St., No. 321, four-st'y brick and brown-stone tenement, tin roof; owner, John D. Hassinger, 319 West Thirty-eighth St.; architects, A. Pfund & Son.

Madison Ave., n w cor. Eightieth St., four-st'y brick dwell., tin roof; cost, $15,000; owner, Miss Julia A. S. Kilpatrick, Sixty-ninth St., e of Eightieth St.; architects, D. & J. Jardine; builder, Edw. Kilpatrick.

Courtlandt Ave., n e cor. One Hundred and Fifty-seventh St., three-st'y frame tenement, tin roof; cost, $5,000; owner, Adolph Koeneman, Courtlandt Ave., cor. One Hundred and Sixty-second St.; architect, A. Arctander.

Eighth Ave., n w cor. One Hundred and Thirty-fourth St., 4 four-st'y brick stores and tenements, tin roofs; cost, each, $10,000; owner, L. Weiher, New Rochelle; architect, H. J. Dudley.

Eighth Ave., w s, 50′ 11″ s One Hundred and Twenty-third St., runs through to St. Nicholas Ave., three-st'y brick store and dwell., tin roof; cost, $10,000; owner, John M. Pinkney, 716 Madison Ave.; architect, J. H. Valentine.

Fifty-seventh St., n s, 225′ w Ninth Ave., seven-st'y brick, terra-cotta and brown-stone tenement, tin

roof; cost, $60,000; owner, Ph. Braender, Ave. B, between Eighty-fourth and Eighty-fifth Sts.; architect, John Brandt.

One Hundred and Thirty-fourth St., s s, 150′ w Eighth Ave., 2 four-st'y brick tenements, tin roofs; cost, each, $14,000; owners and builders, E. K. Little & Co., 62 Pine St.; architect, Wm. D. Peck.

West Forty-seventh St., No. 527, five-st'y brick tenement, tin roof; cost, $15,000; owner, Robert Muhn, 784 Ninth Ave.; architect, C. F. Ridder, Jr.

West Forty-seventh St., No. 529, five-st'y brick tenement, tin roof; cost, $15,000; owner, Philipp Dromeshauser, 535 West Fiftieth St.; architect, C. F. Ridder, Jr.

West Forty-seventh St., No. 531, five-st'y brick tenement, tin roof; cost, $9,500; owner, Henry Reinmuller, 533 West Forty-seventh St.; architect, C. F. Ridder, Jr.

Christopher St., No. 178, four-st'y brick tenement, tin roof; cost, $9,000; owner, Joseph Wille, 176 Christopher St.; architect, C. F. Ridder, Jr.

Courtlandt Ave., e s, 56′ s One Hundred and Sixty-second St., four-st'y frame tenement, tin roof; cost, $6,500; owner, John Hoffmann, 697 Eighth Ave.; architect, C. F. Ridder, Jr.; builder, F. Schwab.

Courtland Ave., e s, 84′ s One Hundred and Sixty-second St., four-st'y frame tenement, tin roof; cost, $6,500; owner, Frank Schleininger, 331 West Thirty-eighth St.; architect, C. F. Ridder, Jr.; builder, F. Schwab.

Fletcher St., Nos. 20 *and* 22, four-st'y brick store, tin roof; cost, $8,000; owner, Malvina Keteltas, by E. M. Keteltas, trustee, 37 St. Mark's Pl.; architect, J. Sexton; builders, C. Callahan and H. D. Powers.

West Thirty-fourth St., Nos. 562, 564 *and* 566, four-st'y brick factory and lofts, tin roof; cost, $9,000; owner, Cornelius Daly, 268 West Thirty-fourth St.; architect, M. V. B. Ferdon; builders, Gillespie & Harlow.

Sixth Ave., s w cor. One Hundred and Thirty-third St., 8 three-st'y and basement brown-stone front dwells., tin and slate roofs; cost, total, $80,000; owner, H. Josephine Wilson, 325 East Fourteenth St.; architects, Cleverdon & Putzel.

Fordham Ave., e s, about 250′ s One Hundred and Eighty-fourth St., one-st'y brick church, slate roof; cost, $9,400; owner, Home for Incurables, on premises; architects, Renwick, Aspinwall & Russell; builders, Edward Gustaveson and Frank Lyons.

Mulberry St., No. 242, six-st'y brick tenement, tin roof; cost, $22,000; owner, Andrew C. Zabriskie, 12 East Thirtieth St.; architect, Jas. E. Ware.

Forty-second St., n s, 100′ w Eighth Ave., five-st'y brick and stone flat, tin roof; cost, $20,000; owner, Theresa Sigrist, 305 West Forty-second St.; architect, G. A. Schellenger.

Ninth Ave., s w cor. Fifty-sixth St., 4 six-st'y brick tenements, tin roofs; cost, total, $110,000; owner, Rosalie Steinhardt, Sixth Ave. and Fifty-seventh St.; architect, Geo. B. Pelham.

Madison St., No. 175, five-st'y brick tenement, tin roof; cost, $17,000; owner, Louis Stein, 174 Madison St.; architect, Chas. Rentz.

Tenth Ave., w s, 25′ s Forty-eighth St., four-st'y brick tenement, tin roof; cost, $13,000; owner, Mrs. Catharine Miller, 449 West Fiftieth St.; architects, A. Pfund & Son.

ALTERATIONS.—*College Pl., No.* 22, repair damage by fire; cost, $5,500; builder, Henry Wallace.

Gold St., No. 85, repair damage by fire; cost, $3,000; owner, Estate Wm. P. Miller, Wm. E. Howell, exr., 226 West Twenty-fourth St.; builder, Elward Smith.

New St., No. 46, four-st'y brick extension, tin roof; cost, $3,000; owner, E. B. Meeks, exr., 46 East Seventy-ninth St.; architect, Augustus Hatfield; builder, Hugh Getty.

West Thirty-sixth St., Nos. 333 *and* 335, repair damage by fire; cost, $6,000; owners, Messrs. Calenburg & Vaupel, on premises; architect, H. J. Dudley.

West Fourteenth St., No. 20, three-st'y brick extension, rebuild front and rear walls of main building, etc.; cost, $20,000; owner, W. Jennings Demorest, 15 East Fourteenth St.; architect, A. Craig; builder, not selected.

Fifth Ave., No. 242, one-st'y brick extension, tin roof, put in elevator and internal alterations; cost, $18,000; owner, Fred J. Slade, exr., Trenton, N. J.; architect, Geo. Ed. Harding.

Cedar St., No. 75, raise one st'y, put in passenger-elevator, and other internal alterations; cost, $50,000; owner, the National Bank of Commerce, on premises; architect, John W. Ritch.

Second Ave., Nos. 1607 *and* 1609, four-st'y brick extension, tin roof; cost, $4,000; owner, Patrick Sheehy, cor. Eighty-seventh St. and Lexington Ave.

Philadelphia.

BUILDING PERMITS.—*Chestnut St., Nos.* 1321 *and* 1323, 2 four-st'y back buildings, 20′ x 60′; Jno. Wanamaker, owner.

Eighteenth St., s of Christian St., three-st'y dwell., 17′ x 64′; W. Marshall, owner.

North St., No. 524, two-st'y stable, 16′ x 72′; W. R. Dougherty, contractor.

South Front St., No. 310, three-st'y store, 15′ x 45′; W. D. Jacoby, contractor.

Vienna St., No. 1326, three-st'y dwell., 18′ x 30′; Jas. McCauley & Sons, contractors.

South Twentieth St., No. 912, three-st'y dwell., 16′ x 67′; Jno. G. Hacks, contractor.

East Montgomery Ave., No. 1320, two-st'y dwell., 16′ x 26′; Wm. J. McDevitt, owner.

Filbert St., No. 922, two-st'y back building, 16′ x 38′; Henry Taylor, contractor.

St. Louis.

BUILDING PERMITS.—Thirty-nine permits have been issued since our last report, twelve of which are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows:—

J. Swaterk, two st'y double brick dwell.; cost, $3,500; Hermann & Schumacher, contractors.

Adolphus Busch, one st'y brick private stable; cost, $15,000; E. Jungenfeld & Co., architects; contract sublet.

H. W. Peters, 3 adjacent two-st'y dwells.; cost, $6,000; M. Dunn, contractor.

Anheuser Busch Brewery Co., seven-st'y brick malt-house; cost, $50,000; E. Jungenfeld & Co., architects; contract sublet.

E. Archard, two-st'y brick dwell.; cost, $2,500; T. F. Marley, contractor.

Fred. Kunst, 2 adjacent two-st'y dwells.; cost, $3,500; Aug. Stade, contractor

Peter Kubrich, two-st'y brick dwell.; cost, $2,500; Thos. Knittel, contractor.

Jos. H. Kelly, 3 adjacent two-st'y dwells.; cost, $4,200; contract sublet.

Henry Belter, two-st'y store and dwell.; cost, $3,300; Wm. Damon, contractor.

J. J. Steffen, 4 adjacent two-st'y tenements; cost, $7,000; J. J. Steffen, contractor.

A. Wackmann, 3 adjacent two-st'y dwells.; cost, $9,000; A. Beinke & Co., architects; Beckemeier & Riekmann, contractors.

Henry Debus, 2 adjacent two-st'y stores and tenements; cost, $5,000; Beckemeier & Riekmann, contractors.

F. Sebastian, two-st'y double tenement; cost, $3,800; P. Sauerwein, contractor.

General Notes.

CHARLESTON, S. C.—The City Assessor, Capt. W. Aiken Kelly, furnishes the following summary of permits issued during the month of February for the erection of new and the improvement of old buildings:—

New buildings, 17 permits; reported cost, $5,850.

Old buildings improved, 10 permits; reported cost, $7,350.

Total permits for February, 27; reported cost, $13,200.

Henry Olinn is building a two-st'y brick store for J. C. Hess, cor. Meeting and Horlbrech Sts.; cost, $13,500.

W. F. Carter has closed a contract with A. Sydney Smith, to build a two-and-one-half-st'y frame residence, cor. Montague and Rutledge Sts., to cost $8,700; first pile to be driven on Inauguration Day.

Bids and Contracts.

CINCINNATI, O.—The following is an abstract of the bids for the carpenter and joiner work by the board of trustees to rebuild the court-house, Hamilton County, O.:—

H. E. Holtzinger, $46,336.
James Griffith & Sons, $35,980.
Henry Behrens, $45,265.
Robert Thoms, $38,900.
G. F. Neiber, $39,476.
J. W. Cotteral & Co., $28,937.50 (*accepted*).
Harwood & Son, $40,628.
James Gurren & Co., $50,000.

TERRE HAUTE, IND.—The following is a synopsis of the bids for iron beams required for the court-house, etc.:—

Dearborn Foundry Co., 1525 Dearborn St., Chicago, Ill., $1,024.61 and $1,190; bid of $1,190 reduced ½ cent per pound on account of decline in market (*accepted*).

Carnegie Bros., Pittsburgh, Pa., $1,036.11 and $1,201.94; bid of $1,201.95 reduced ½ cent per pound on account of decline in market.

N. J. Steel and Iron Co., 17 Burling Slip, New York, $1,207.71

Phœnix Iron Co., Trenton, N. J., $1,218.77.

L. M. Morris, Pittsburgh, Pa., $1,282.06.

Eagle Iron Works, Terre Haute, Ind., $1,126.21.

Phœnix Foundry and Machine Co., Terre Haute, Ind., $1,150.

COMPETITION.

CITY-HALL.

[At Richmond, Va.]
February 16, 1885.

Proposals are invited **until June 1st, 1885**, for furnishing designs for a city-hall upon which premiums will be paid as follows:—

For first best design, $700.
For second best design, $300.

The Committee on Grounds and Buildings of the City Council reserves the right to reject any and all designs.

For information address the undersigned.

487 W. E. CUTSHAW, City Engineer.

LADIES' COLLEGE.

[At Montreal, Can.]
22 ST. JOHN STREET,
MONTREAL, February 20, 1885.

The Trustees of the Trafalgar Institute, being desirous of erecting a building for the purposes of a ladies' college, invite architects to submit plans and estimates for the same.

Full particulars as to site, etc., can be had by applying to the undersigned.

Plans, etc., to be submitted **not later than 1st of April next.**

ALEX. F. RIDDELL,
481 Secretary Trafalgar Institute.

PROPOSALS.

ELEVATORS.

[At Kansas City, Mo., Memphis, Tenn., and Montgomery, Ala.]
OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., March 3, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 31st day of March, 1885**, for furnishing and erecting complete, a steam passenger elevator in the new public buildings in each of the *above-named cities*, in accordance with drawings and specification, copies of which and any additional information may be had at this office or the office of the superintendent at each building.

Bids must be accompanied by a certified check for $1,000, drawn to the order of the "Secretary of the Treasury," as a guaranty that the bidder will enter into a contract if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received *after* the time of opening will *not* be considered. M. E. BELL.

481 Supervising Architect.

PROPOSALS.

PAINTING, POLISHING AND GLAZING.

[At Memphis, Tenn.]
OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., February 28, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 27th day of March, 1885**, for all the painting, polishing and glazing required for the custom-house, etc., building at Memphis, Tenn., in accordance with specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $500, drawn to the order of the Secretary of the Treasury, as a guarantee that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered. M. E. BELL,

481 Supervising Architect.

BOILER.

[At Quebec, Can.]
DEPARTMENT OF PUBLIC WORKS,
OTTAWA, February 19, 1885.

Sealed tenders, addressed to the undersigned, and endorsed "Tender for Boiler," will be received at this office **until Friday, the 13th day of March next, inclusively,** for the construction of and placing in position a new steel boiler, in the dredge "Canada," now lying in the Louise Basin, Quebec Harbor, according to a plan and specification to be seen at this office, at the Harbor Engineer's office, Dalhousie St., Quebec, and at the office of the Superintendent of Dredging, Public Works Office, Custom-House Building, St. John, N. B., where printed forms of tender can be obtained.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied and signed with their actual signatures.

Each tender must be accompanied by an accepted bank check, made payable to the order of the Honorable the Minister of Public Works, equal to five per cent of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called on to do so, or if he fail to complete the work contracted for. If the tender be not accepted, the check will be returned.

The Department will not be bound to accept the lowest or any tender.

By order, A. GOBEIL,

480 Secretary.

ELEVATORS.

[At Cincinnati, O.]
OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., February 28, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 28th day of March, 1885**, for furnishing and erecting complete, in the custom-house and post-office building at Cincinnati, O., two hydraulic passenger-elevators, two mail-elevators, and one ash-lift, in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $1,000, drawn to the order of the Secretary of the Treasury, as a guarantee that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered. M. E. BELL.

481 Supervising Architect.

EXCAVATING, CONCRETE FOUNDATIONS, BRICKWORK, ETC.

[At Shreveport, La.]
OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., February 25, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 11th day of April, 1885**, for furnishing all labor and material required for the excavating, the concrete foundations, and the brick and stone work of basement and superstructure of the post-office, court-house, etc., building at Shreveport, La., in accordance with the drawings and specification, copies of which may be seen and any additional information obtained at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $1,000, drawn to the order of the Secretary of the Treasury, as a guarantee that the bidder will enter into a contract if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered. M. E. BELL,

481 Supervising Architect.

CITY-HALL.

[At Grand Rapids, Mich.]

The Board of Public Works, of Grand Rapids, Mich., invite sealed proposals **until March 19, 1885, at 7 o'clock,** P. M., for furnishing the entire material and labor for building a city-hall. Drawings, specifications and instructions to bidders, together with printed forms and schedules, can be seen at the office of said Board. Each bidder shall deposit with his proposal a certified check (payable to the order of the undersigned) for one thousand dollars to be forfeited to the City of Grand Rapids, in case he shall fail to execute a contract and bond satisfactory to the Board, should his proposal be accepted.

The Board reserve the right to reject any or all bids.

The building is to be a *first-class fire-proof structure*, in size about 100′ x 160′; the exterior to be of rock-faced stone backed with brick.

GEO. W. THAYER,

480 President of Board of Public Works.